



Date Prepared: _____
Prepared By: _____

DESIGN REPORT FOR THE CONSTRUCTION OR ALTERATION OF VIRGINIA REGULATED IMPOUNDING STRUCTURES

Note: Any executed Design Report for construction of an impounding structure must be mailed to the appropriate Regional Engineer. In addition, a completed Certificate and Permit Application Fee Form (DCR199-192) and the required fee must be mailed under separate cover to: Virginia Department of Conservation and Recreation, Division of Finance, Accounts Payable, 600 E. Main St., 24th Floor, Richmond, Virginia 23219.

Reference: Impounding Structures Regulations, 4VAC 50-20-10 et seq., including 4VAC 50-20-240, Virginia Soil and Water Conservation Board

1. Project Information:

- a. Proposed Construction: _____
Proposed Alteration: _____
- b. Name of Impounding Structure: _____
- c. Inventory Number: _____ (Leave blank if new Construction)
- d. Name of Reservoir: _____
- e. Purpose of Reservoir: _____

2. Impounding Structure Hazard Classification:

- a. Hazard Potential Classification Table I Impounding Structure Regulations:
(Check one) High Significant Low

3. Location of Impounding Structure:

- a. City or County: _____
- b. Located _____ feet/miles upstream/downstream of Highway Number _____
- c. Name of river or stream: _____
- d. Latitude: _____ Longitude: _____

4. Ownership:

- a. Owner's Name: _____
If a corporation, name of representative: _____
- b. Mailing Address: _____

- c. Telephone: (Residential) _____ (Business) _____
- d. Other means of communication: _____

5. Design Engineer:

- a. Design Engineer and Design Firm: _____
- b. Design Engineer Virginia License Number: _____
- c. Mailing Address: _____

- d. Telephone: (Business) _____

6. Impounding Structure Data:

a. Type of material: earth _____ concrete _____ masonry _____
 Other: _____

Note: Identify datum used for elevations.
 For new construction, complete the design configuration column.
 For alteration, complete both the existing and design configuration columns.

	Existing Configuration		Design Configuration	
b. Top of Dam Elevation	_____		_____	Feet
c. Streambed Elevation at Toe (Lowest)	_____		_____	Feet
d. Height of Impounding Structure	_____		_____	Feet
e. Crest Length (Exclusive of Spillway)	_____		_____	Feet
f. Crest Width	_____		_____	Feet
g. Upstream Slope (Horizontal to Vertical)	H: _____	V	H: _____	V
h. Downstream Slope (Horizontal to Vertical)	H: _____	V	H: _____	V

7. Reservoir Data

	Existing Configuration		Design Configuration	
a. Maximum Capacity	_____		_____	Acre-feet
b. Maximum Pool Elevation	_____		_____	Feet
c. Maximum Pool Surface Area	_____		_____	Acres
d. Normal Capacity	_____		_____	Acre-feet
e. Normal Pool Elevation	_____		_____	Feet
f. Normal Pool Surface Area	_____		_____	Acres
g. Freeboard (to lowest crest elevation)	_____		_____	Feet

8. Spillway Data

	Type	Construction Material	Design Configuration	Invert Elevation	
a. Low Level Drain	_____	_____	_____	_____	Feet
b. Principal Spillway	_____	_____	_____	_____	Feet
c. Emergency Spillway	_____	_____	_____	_____	Feet

- 9. Watershed Data:**
- a. Drainage Area: _____ square miles
- b. Type and Extent of Watershed Development: _____

- c. Time of Concentration: _____ (hours)
- d. Routing Procedure: _____ Routing Model used: _____
- e. Spillway Design Flood used (check and state source):
 _____ PMF, source _____
 _____ 1/2 PMF, source _____
 _____ 100 Year, source _____
 _____ Other, source _____
- f. Design inflow hydrograph: Volume: _____ acre-feet
 Peak inflow: _____ cfs
 Rainfall duration of design inflow hydrograph: _____ hours
- g. Freeboard during passage of spillway design flood: _____ feet
- h. Provide printouts for 6, 12, and 24 hour models

10. Additional Information:

Provide as attachments to the Design Report the following information. Note: For alteration permits the details of this information is to be in accordance with the scope of the proposed alteration:

- a. A description of properties located in the dam break inundation zone downstream from the site of the proposed/existing impounding structure, including the location and number of structures, buildings, roads, utilities and other property that would be endangered should the impounding structure fail.
- b. Evidence that the local government or governments have been notified of the proposal by the owner to build or alter an impounding structure.
- c. Maps showing the location of the impounding structure that include the county or city in which the proposed/existing impounding structure is located, the location of roads and access to the site, and the outline of the impoundment. Existing aerial photographs or existing topographic maps may be used for this purpose.
- d. A report of the geotechnical investigations(s) of the foundation soils, bedrock, or both and of the materials to be used to construct or alter the impounding structure.
- e. Design assumptions and analyses sufficient to indicate that the impounding structure will be stable during construction or alteration and during the life of the impounding structure under all conditions of impoundment operations, including rapid filling, flood surcharge, seismic loadings, and rapid drawdown of the impoundment.
- f. Evaluation of the stability of the impoundment rim area to safeguard against impoundment rim slides of such magnitude as to create waves capable of overtopping the impounding structure and evaluation of rim stability during seismic activity.
- g. Design assumptions and analyses sufficient to indicate the seepage in, around, through, or under the impounding structure, foundation, and abutments will be reasonably and practically controlled so that internal or external forces or results thereof will not endanger the stability and integrity of the impounding structure. The design report shall also include information on graded filter design.
- h. Calculations and assumptions relative to hydraulic and structural design of the spillway or spillways and energy dissipater or dissipaters. Spillway capacity shall conform to the criteria of Table 1 and 4VAC50-20-52.
- i. Provisions to ensure that the impounding structure and appurtenances will be protected against unacceptable deterioration or erosion due to freezing and thawing, wind, wave action, and rain, or any combination thereof.
- j. Other pertinent design data, assumptions, and analyses commensurate with the nature of the particular impounding structure and specific site conditions, including when required, a plan and water surface profile of the dam break inundation zone.
- k. A description of the techniques to be used to divert stream flow during construction so as to prevent hazard to life, health and property, including a detailed plan and procedures to maintain a stable impounding structure during storm events, a drawing showing temporary diversion devices, and a description of the potential impoundment during construction.
- l. A plan for project construction monitoring and quality control testing to confirm that construction materials and performance standards meet the design requirements.
- m. Plans and specifications as required by 4VAC50-20-310, signed and sealed by the engineer.

List of attached drawings and specifications:

CERTIFICATION BY OWNER'S ENGINEER

I hereby certify that the information provided in this Design Report has been examined by me and found in my professional judgment to be true and correct.

Signed: _____ Virginia Number: _____
Professional Engineer's Signature Print Name

This _____ day of _____, 20 ____ .

Engineer's Virginia Seal:



CERTIFICATION BY OWNER

I hereby certify that I have received this Design Report.

Signed: _____
Owner's Signature Print Name

This _____ Day of _____, 20 ____ .

**Mail the executed form to the appropriate
Department of Conservation and Recreation
Division of Dam Safety and Floodplain Management
Regional Engineer**