

**Nutrient Management Plan Special Conditions for  
Nutrient Management Plans Developed for Biosolids Applications  
October 2011**

The following management practices will be utilized for operations using biosolids:

1. Soil samples for biosolids application fields will be analyzed at least once every three (3) years for pH, phosphorus, potassium, calcium, and magnesium in order to maximize the efficient utilization of nutrients. A representative soil sample of each field representing an area up to approximately twenty acres will be comprised of cores randomly sampled throughout the field. Soil sampling core depth will be from 0 – 4 inches for land that has not been tilled within the past three years, or 0 – 6 inches for land that has been tilled within the past three years. Soil pH will be maintained at appropriate agronomic levels to promote optimum crop growth and nutrient utilization.
2. When soil pH is not the limiting factor for biosolids application rates, preferred application rates for alkaline stabilized biosolids shall be restricted in accordance with a lime requirements test determined by commercial or state soil testing laboratories, listed in # 3 below; or calcium carbonate equivalent loadings shall not exceed rates expected to attain soil pH values in the plow layer above 6.5 for fields located in the coastal plain and above 6.8 for fields located outside the coastal plain area of Virginia; whichever is most restrictive.
3. Soil test analysis will be performed by one of the laboratories listed below. Soil phosphorus levels must be determined using the Mehlich I or Mehlich III procedure.
  - A & L Agricultural Labs, Richmond
  - Brookside Laboratories
  - Spectrum Analytical Laboratories
  - AgroLab, Inc
  - Midwest Laboratories, Inc
  - Virginia Tech Soil Testing Lab
  - Waters Agricultural Laboratories
  - Agri-Analysis Testing Laboratory
  - Logan Labs, LLC
4. Biosolids sampling procedures shall follow acceptable protocol for obtaining representative samples and ensuring their quality and integrity. Refer to the Environmental Protection Agency's 1989 *POTW Sludge Sampling and Analysis Guidance Manual* for detailed information regarding biosolids sampling procedures. The actual biosolids application rates shall be based on the annual average biosolids analysis. The average biosolids quality shall be established from the results of approved analytical testing of composite samples obtained during the most recent 12 months of monitoring. For proposed treatment works, rates may be initially based on the biosolids characteristic produced by similar generating facilities. At a minimum, representative biosolids samples will be analyzed at the frequency and for the parameters specified in the VPA or VPDES Permit: These include but are not limited to total nitrogen or total Kjeldahl nitrogen, ammonia-nitrogen, total phosphorus, total potassium, calcium carbonate equivalency, and percent solids. Biosolids analysis results will be used to determine actual application rates that do not exceed the nitrogen, phosphorus and lime application rates specified in the nutrient management plan.

5. All crops will be planted and harvested in a timely manner using commercially acceptable management practices.
6. Make biosolids applications at or near planting or to existing actively growing crops to assure that nutrients are properly utilized. Utilize Section 4 VAC 5-15-150.A.4 of the Nutrient Management Training and Certification Regulations to determine appropriate biosolids application times and Virginia Nutrient Management Standards and Criteria, revised October 2005 and applicable DCR Guidance documents to determine rates. If additional commercial fertilizer applications (especially nitrogen) are needed they should be made as a split application separate from the biosolids application, either as a sidedress or topdress application.
7. For permanent hay or pasture, an adequate stand of hay and/or pasture crop species will be established prior to land application of biosolids, unless biosolids can be land applied to meet nutrient recommendations for hay establishment. Commercially acceptable stands of the listed species will be maintained and other weeds and grasses controlled. All hay crops will be harvested in a timely and regular manner, removed from fields, and utilized for a suitable purpose.
8. A hay field is one in which a hay crop is mechanically harvested 2 or more times per year, and the harvested crop is removed from the field. For tall grass hay fields, biosolids applications shall be made using the expected number of cuttings to determine total nitrogen rate. For hay crop nutrient recommendations refer to DCR Standards and Criteria. If only one cutting of hay is made per year, refer to DCR Guidance for Crop Nutrient Recommendations for Hay/Pasture Fields (NMP-1).
9. A hay/pasture field is one in which a hay crop is mechanically harvested and the harvested crop is removed from the field and utilized for a suitable purpose. Once the hay crop has been removed, pasturing of livestock at the recommended stocking rate for the predominant soil productivity group occurs for the remainder of the season. For hay/pasture crop nutrient recommendations, refer to DCR guidance document NMP-1.
10. Pasture and hay fields should be grazed or clipped to a height of approximately four and six inches, respectively, prior to biosolids application unless the biosolids can be uniformly applied so as not to mat down the vegetative cover so that the site vegetation can be clipped to a height of approximately four inches within one week of the biosolids application. If application methods do not result in a uniform distribution of biosolids, additional operational methods shall be employed following application such as dragging with a pasture harrow, followed by clipping if required, to achieve a uniform distribution of the applied biosolids.
11. A trap crop is a timely planted cereal grain for capturing residual soil nitrogen through the fall and winter months. Biosolids applications shall not occur before the trap crop reaches Zadok's growth stage 23 (one main shoot and 3 tillers) or greater AND having a uniform stand throughout the entire area to be spread of at least 20 plants per square foot on sites that are not environmentally sensitive. Biosolids applications to a trap crop shall be within 60 days of planting a spring planted crop on sites identified as environmental sensitive. For nutrient recommendations refer to Virginia Nutrient Management Standards and Criteria, revised 2005

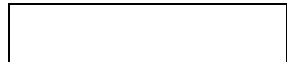
12. Biosolids Spreading Schedule.

**BIOSOLIDS SPREADING SCHEDULE**

CROP	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		
Alfalfa	[Solid Black]			[White]					[Solid Black]					
Bermuda Grass	[Solid Black]			[White]							15th	[Solid Black]		
Corn	20th	[Vertical Bars]				20th	[White]		20th	[Solid Black]				
Soybeans	[Solid Black]		[Vertical Bars]			20th	[Solid Black]							
Hay*	[Diagonal Hatching]			[White]						[Diagonal Hatching]				
Pasture*	[Diagonal Hatching]			[White]						[Diagonal Hatching]				
Sorghum/Millet	[Solid Black]		[Vertical Bars]			15th	[White]		20th	[Solid Black]				
Small Grain	[Solid Black]		15th	[White]			[Solid Black]		[White]			[Diagonal Hatching]		

Note Late fall and winter biosolids applications may be made to a trap crop only if applications are in accordance with 4VAC5-15.

\* Cool season grasses only, Fescue and or Orchardgrass



Spread liquid or dewatered biosolids at the rates and times specified in the nutrient management plan.



Do not spread liquid or dewatered biosolids during these shaded time periods.



Applications during these time periods shall comply with the following:

- Biosolids applications will not be made earlier than 30 days prior to planting on environmentally sensitive sites.
- On fields listed as not environmentally sensitive:
  - Applications of dewatered anaerobically digested or dewatered lime stabilized biosolids will not occur more than 90 days prior to spring planting on fields having (i) slopes less than 7% throughout the application area or (ii) having at least 60% uniform ground cover from crop residue.
  - Liquid biosolids applications will not occur more than 60 days prior to spring planting.



Biosolids applications should be avoided whenever possible during this period (late fall-winter). Fields must have greater than 60% uniform live cover with plant height greater than three (3) inches. Applications made to cool season grass hay and pasture, if applied after 9/1 of any year until 3/1 of the following year, shall not exceed 1/2 of the total nitrogen rate

13. Nutrient management plans that contain fields in which row crops will be grown will be revised at least once every three (3) years. Nutrient management plans that contain only permanent hay or pasture fields will be revised at least once every five (5) years. Any such plan revisions will be submitted to DCR and the farm operator within two weeks of the revision per 4VAC5-15-100 C.
14. Biosolids applications on CRP or CREP lands must be pre-approved by NRCS and an appropriate conservation plan and NMP must be in place prior to application.
15. This nutrient management plan shall be amended or modified, by the certified planner who developed the initial plan, no later than the day of biosolids application if:
  - additional imported manure, biosolids or industrial waste that was not identified in the existing plan is applied to fields under the control of the operator;
  - available land area for the utilization of biosolids decreases below the level necessary to utilize biosolids in the plan;
  - cropping systems, rotations, tillage, or fields are changed where phosphorus will be applied at levels greater than crop nutrient needs based on soil analysis; or
  - actual biosolids nutrient applications are significantly more or less than the original planned applications, such that any needed supplemental nutrient applications (from any source) would need to be amended to achieve the appropriate loading rate and yield goals.
16. Any requirements of a permit issued by DEQ, which are more restrictive, supersede these Special Conditions.