LAND APPLICATION OF BIOSOLIDS

LOUISA COUNTY WATER AUTHORITY (LCWA)

**OPERATIONS AND MAINTENANCE MANUAL**

October 02, 2014

(Approved November 14, 2014)

# TABLE OF CONTENTS Page

I. GENERAL DESCRIPTON OF OPERATIONS 3

II. LAND APPLICATION SPECIAL CONDITIONS – BIOSOLIDS 4

A. 14 Day Notification 4

B. Signage Requirements 4

C. 100 Day Notification to Locality 5

D. Notification of Sign Posting 5

E. 24 Hour Notification 5

F. Site Operator Notification and Information 5

G. Certified Land Applicator Requirement 6

H. Pollutant Management 6

III. METHOD OF OPERATION 6

A. Biosolids Management Plan (BSMP) 6

B. Nutrient Management Plan (NMP) 7

C. Infrequent Application 8

D. Site Restrictions 8

E. Description of Operations 9

F. Site Management 12

G. Site Access Restrictions 16

H. Forestland (Silviculture) 16

I. Cumulative Pollutant Loading Rate (CPLR) Biosolids 16

J. Other Special Conditions 17

K. Biosolids Storage 20

L. Biosolids Application Control 21

M. Transportation Routes 22

N. Biosolids Spill Control and Prevention 22

O. Biosolids Limitations and Monitoring 23

P. Monitoring and Reporting 27

APPENDIX A – Approved Biosolids Locations & Acreage 30

APPENDIX B – Biosolid Sources 31

APPENDIX C – Regional WWTP Sludge Odor Control Plan 32

APPENDIX D - Zion Crossroads WWTP Sludge Odor Control Plan 34

I. GENERAL DESCRIPTION OF OPERATIONS

Louisa County Water Authority (LCWA) proposes to land-apply municipal biosolids to agricultural sites approved by the Virginia Department of Environmental Quality (DEQ). All biosolids sources meet the criteria for Class B pathogen control, or greater, as defined by the Virginia Administrative Code (9VAC25-32-675). A list of approved biosolids sources that LCWA proposes for land application is included in Appendix B. Included in the list is contact information for each facility.

Biosolids will be transported from the treatment plants in totally enclosed or partially enclosed vehicles with sealed tailgates to prevent spillage. The biosolids will be hauled to selected approved agricultural land application sites. LCWA will land apply stabilized biosolids on approved sites in accordance with the operational procedures established in this manual.

Landowners/farmers are interested in receiving the biosolids material from LCWA for the nutrient content and beneficial organic matter it adds to the soil. All biosolids have been evaluated and found to be suitable for application on agricultural land, based on the rate of application that is governed by the nutrient management plan. Biosolids/WTP Residuals loading rates are based on the most rate limiting factor, specifically plant available nitrogen (PAN) phosphorus (as P2O5) or calcium carbonate equivalency (CCE). These must be within the recommendations of the nutrient management plan for the application site and other limiting factors specified in Part I.D.9., Part I.D.10. and Part I.D.11 of the VPA 00074 permit.

The permitted name and address for the Louisa County Water Authority is:

Louisa County Water Authority (LCWA)

P.O. Box 9

23 Loudin Lane

Louisa, VA 23093

The following are contacts for the land application process:

Pam Baughman, General Manager (540) 967-1122

Wesley Basore, Wastewater Operations Manager (540) 894-3807

Phil Bailey, Land Applicator (540) 223-0835

H.P. Smith, Land Applicator (540) 967-1122

II. LAND APPLICATION SPECIAL CONDITIONS – BIOSOLIDS

**A. 14 Day Notification** - LCWA shall provide written notification to the DEQ-NRO and the County of Louisa (unless they request in writing not to receive the notice) at least 14 days prior to the initial commencement of land application of biosolids at each permitted site. The notice shall contain the following information:

1. Permitted site identification;

2. Permitted site location, to include:

a. County;

b. Route number/road name; and

c. Latitude/longitude coordinates in decimal degrees that represent a location within

the boundaries of the site; and

3. Expected sources of biosolids.

**B. Signage Requirements** - At least five business days prior to the delivery of biosolids to each land application site, LCWA shall post signs at the site that are visible and legible from the public right-of-way in both directions of travel, and conform to the specifications herein, notifying the public that biosolids will be applied. The sign shall be maintained at the site during land application for at least five business days after the land application. After the last land application to the site, all signs will remain posted for a minimum of 30 days signifying biosolids application has been completed.

1. The sign shall be visible and legible from the public road adjacent to the field, or the intersection of the public road and the main access road or driveway to the site. In addition, if the field is located adjacent to a public right-of-way, at least one sign shall be posted along each public road frontage beside the field to which biosolids are to be land applied. Upon the request of LCWA, the department may grant a waiver to this or any other signage requirement, or require alternative posting options due to extenuating circumstances.

2. The sign shall be made of weather-resistant materials and sturdy enough to remain in place and legible throughout the period that the sign is required at the site. The sign shall be temporary, non-illuminated, and four square feet or more in area, and shall only contain the following information:

a. A statement that biosolids are being land-applied at the site;

b. The name and telephone number of the permit holder;

c. The name or title, and telephone number of an individual designated by the permit holder to respond to complaints and inquiries.

d. Contact information for the DEQ-Northern Regional Office, including a telephone number for complaints and inquiries.

**C. 100 day notification to the locality** - At least 100 days prior to the first application of biosolids, the permit holder shall provide written notification to the local government where the site is located. This requirement may be satisfied by DEQ's notice to the local government at the time of receiving the permit application if all necessary information is included in the notice or by providing a list of available permitted sites in the locality at least 100 days prior to commencing the application at any site on the list. If the site is located in more than one county, the information shall be provided to all jurisdictions where the site is located.

**D. Notification of Sign Posting** – Not more than 24 hours after posting signs at the land application site as required in Part II.B, the permittee shall deliver or cause to be delivered written notification to DEQ - NRO and the chief executive officer or designee for the local government where the site is located, unless they request in writing not to receive the notice. Notice shall include the following:

1. The name of the permittee, the name of a representative of the permittee knowledgeable about the permit and the telephone number of the permittee;

2. The location where the land application will take place, including the tax map number and the DEQ control number for sites on which land application is to take place;

3. The name or title and telephone number of at least one individual designated by the permittee to respond to questions and complaints related to the land application project, if not the permittee identified in Part I.E.4.a;

4. The approximate dates on which land application is to begin and end at the site;

5. The name, address and telephone number of the wastewater treatment facility, or facilities, from which the biosolids will originate, including the name or title of a representative of the treatment facility that is knowledgeable about the land application operation.

**E. 24 Hour Notification** – Not more than 24 hours prior to commencing land application activities, including delivery of biosolids at a permitted site, the permittee shall notify in writing DEQ and the chief executive officer or designee for the local government where the site is located, unless they request in writing not to receive the notice. This notification shall include identification of the biosolids/WTP residuals source and shall include only sites where land application activities will commence within 24 hours or where biosolids will be staged within 24 hours.

**F. Site Operator Notification and Information** – The permittee shall provide to the operator of the land application site that receives biosolids notification and information as required by 9VAC25- 32-313.I. The notification shall include at minimum:

1. A statement that biosolids land applied meet Class B pathogen reduction; and VAR requirements 1 through 8; or VAR requirements 9 or 10, requiring incorporation or injection;

2. A statement that metals concentrations in the biosolids applied to the site were below the pollution concentration or that they are CPLR biosolids and loading will be tracked;

3. When the biosolids molybdenum concentration is 40 mg/kg or higher, a notice which includes the molybdenum concentration and a statement that research suggests that a monthly average molybdenum concentration below 40 mg/kg may be appropriate to reduce the risk of copper deficiency in grazing animals; and

4. The list of site access restrictions required for Class B biosolids.

**G. Certified Land Applicator Requirement** – LCWA shall ensure that no land application activities occur unless a certified land applicator (as specified in Article 5 of the VPA Permit Regulation 9 VAC 25- 32, Sections 690 through 760) is onsite at all times during such land application. Certified land applicators may be considered to be onsite if they are at the site or are available within 30 minutes to return to the site to verify and ensure that land application of biosolids is in compliance with the VPA00074 permit.

**H. Pollutant Management** - All activities covered under the VPA00074 permit prohibit point source discharge of pollutants to surface waters except in the case of a storm event greater than the 25-year, 24-hour storm.

**III. METHOD OF OPERATION**

This section contains detailed operational procedures designed to comply with applicable regulations and guidelines. Additional procedures and constraints have been incorporated to provide a land application program that safeguards public health, surface and groundwater supplies and provides an agricultural benefit to the landowner.

**A. BIOSOLIDS MANAGEMENT PLAN (BSMP)**

1. BSMP – The permittee shall implement and maintain a BSMP which consists of the following components:

a. The materials, including site booklets, developed and submitted at the time of permit application or permit modification to add a farm or land application site to the permit in accordance with 9VAC25- 32-60.F;

b. A NMP developed for each site prior to biosolids/WTP residuals application;

c. The Operations and Maintenance (O&M) Manual; and

d. The Odor Control Plans (OCP) (Appendix C & D).

The BSMP and all of its components are an enforceable part of the permit.

**B. Nutrient Management Plan (NMP)** - A NMP shall be developed for each land application site prior to biosolids/WTP residuals application.

1. The NMP shall be prepared or revised by a certified nutrient management planner as stipulated in 4VAC5-15-10 et seq. The NMP shall be written in accordance with the criteria stipulated in 4VAC5-15-10 et seq. A copy of the NMP shall be present at the land application site during land application operations and available for review by DEQ staff. A copy of the NMP shall be submitted to the DEQ – Northern Regional Office upon request. Within 30 days after land application at the site has commenced, the permittee shall provide a copy of the NMP to the farm operator of the site, the Department of Conservation and Recreation (DCR) and the chief executive officer or designee for the local government where land application of biosolids/WTP residuals is to occur, unless they request in writing not to receive the NMP.

2. The NMP must be approved by DCR prior to land application for application sites where the soil test phosphorus levels exceed the values in Table 1 of this section. For purposes of approval, permittees shall submit the NMP to DCR at least 30 days prior to the anticipated date of land application.

|  |  |
| --- | --- |
| Table 1: Soil Phosphorus Levels Requiring NMP Approval | |
| REGION | SOIL TEST P (ppm)  (Mehlich I - VPI & SU Test)\* |
| Eastern Shore and Lower Coastal Plain | 135 |
| Middle and Upper Coastal Plain and Piedmont | 136 |
| Ridge and Valley | 162 |
| \*If results are from another laboratory, DCR approved conversion factors must be used. | |

3. All NMPs shall account for all sources of nutrients to be applied to the site. If the application rate has been determined using the phosphorus index and that rate is dependent upon setback distance to stream or riparian buffer width greater than the required setback distance in Part I.J.13.a. of the VPA00074 Permit, the phosphorus index calculations shall be included in the NMP. The extended setback distance required by the NMP shall be an enforceable part of the permit.

4. Where the following conditions exist, the NMP shall be approved by DCR and a copy of the approval letter submitted to DEQ:

a. The proposed site is operated by an owner or lessee of a confined animal feeding operation or a confined poultry feeding operation, as defined in subsections A of §62.1- 44.17:1 and 62.1-44.17:1:1 of the Code of Virginia;

b. The land application of biosolids is to be performed more frequently than once every three years at greater than 50% of the annual agronomic rate;

c. Mined or disturbed land sites where land application is proposed at greater than agronomic rates; or

d. The site-specific conditions increase the risk that land application may adversely impact state waters.

5. When conditions at the land application site change so that it meets one or more of the specific conditions identified in Part I.D.2 of the VPA00074 Permit, an approved NMP shall be submitted prior to any subsequent land application at the site.

**C. Infrequent Application** – If biosolids are applied to a field only once in a three-year period, biosolids may be applied such that the total crop needs for nitrogen is not exceeded during a one-year crop rotation period including the production and harvesting of two crops in succession within a consecutive 12-month growing season.

The NMP shall account for all sources of nutrients applied to the site, including existing residuals from prior nutrient applications.

An infrequent application at full agronomic rate will be restricted to provide no more than 10% of the CPLR for cadmium and lead in Part I.A.1.b per application.

**D. Site Restrictions for Land Application of Class B biosolids are as follows**:

1. Food crops with harvested parts that touch the biosolids soil mixture and are totally above the land surface shall not be harvested for 14 months after application of biosolids;

2. Food crops with harvested parts below the surface of the land shall not be harvested for 20 months after application of biosolids when the biosolids remain on the land surface for four months or longer prior to incorporation into the soil;

3. Food crops with harvested parts below the surface of the land shall not be harvested for 38 months after application of biosolids when the biosolids remain on the land surface for less than four months prior to incorporation into the soil;

4. Food crops, feed crops, and fiber crops shall not be harvested for 30 days after application of biosolids;

5. Animals shall not be allowed to graze on the land for 30 days after application of biosolids;

6. Lactating dairy livestock shall not be allowed on sites within 60 days following biosolids application and green chopped forage from the site shall not be fed to milk cows if forage is removed within 60 days following biosolids application;

7. Turf grown on land where biosolids is applied shall not be harvested for one year after application of the biosolids when the harvested turf is placed on either land with a high potential for public exposure or a lawn, unless otherwise specified by the State Water Control Board;

8. Public access to land with a high potential for public exposure shall be restricted for one year after application of biosolids; and

9. Public access to land with a low potential for public exposure shall be restricted for 30 days after application of biosolids.

\* Loading Rates - Application rates shall be based on the annual average sludge quality. The average sludge quality shall be established from the results of approved analytical testing of composite samples obtained during the most recent 12 months of monitoring.

**E. Physical Description of Operations**

**1. Liquid Biosolids**

a. While LCWA does not currently apply liquid biosolids, the following procedure is to be used should LCWA start liquid biosolids applications. For this reason some items may be listed in a generic context. Biosolids will be transported from the wastewater treatment facility in totally closed, water tight transport vehicles to the land application site. Liquid biosolids will be transferred from the transport vehicle through a suction hose to the land application equipment stationed on the field receiving biosolids. The land application equipment will perform all biosolids distribution.

b. Biosolids distribution on the site will be uniform throughout the distribution area. The mode of application will be either surface application or subsurface injection. For surface application, the biosolids will be incorporated into the soil within 48 hours of application unless there is sufficient ground cover to prevent runoff loss in a rain event. No-till and pasture/hay fields are defined as having sufficient cover, as well as fields with ≥60% uniform cover of stalks, vines, stubble, etc.

c. To ensure adequate control of the application rate for each site, the equipment used for spreading the liquid biosolids will be calibrated by measuring the gallons applied on a known area (square footage). Equipment variables should be adjusted to achieve the desired application rate.

d. A summary of Equipment to be employed for liquid biosolids application is as follows:

1. One water tight transport vehicle.

2. One piece of land application equipment.

3. Operations will be discontinued during periods of wet weather causing soils to be saturated and will not resume until sufficient drying of fields has occurred.

4. The transport vehicles will be state inspected, licensed and appropriately marked as required for purpose of transporting the biosolids material.

5. At no time shall liquid Biosolids/WTP Residuals (< 15% total solids) be surface applied at a hydraulic loading rate greater than 14,000 gal/ac (0.5 inches depth) in a single application procedure. Sufficient drying time shall be allowed between subsequent applications.

**2. Dewatered Biosolids Handled in Cake Form**:

a. Biosolids will be transported from the wastewater treatment facilities in partially enclosed vehicles if the biosolids are dewatered to a cake consistency of 15 to 30 percent (%) solids. The tailgates will be properly sealed to prevent leakage.

B. Biosolids will be off-loaded (staged) at the application site currently being utilized for biosolids application. The biosolids will be evenly distributed on the field by using a tractor and box grader. Normally, all biosolids will be immediately spread after offloading at the site and no biosolids shall remain stockpiled on-site except as noted;

C. Biosolids/WTP Residuals may be staged in preparation for commencing land application or during an ongoing application. Biosolids shall be staged within the land application area of the permitted field or an adjacent permitted field. Staging is not considered storage and shall not take the place of storage.

1. Staging of biosolids shall not commence unless the field meets the requirements for land application in accordance with Part IX of 9VAC25-32 and field conditions are favorable for land application.

2. Biosolids may be staged for up to seven days, including the first day biosolids are offloaded onto the staging area, with the following exceptions:

a. In areas of Karst topography;

b. In areas identified in the U.S. Department of Agriculture - Natural Resources Conservation Service (USDA-NRCS) soil survey as frequently flooded; or

c. At sites that have on-site storage.

3. If staged biosolids cannot be spread by the end of the seventh day of staging, the permittee shall take the following actions:

a. Biosolids shall be covered to prevent contact with precipitation;

b. The permittee shall notify DEQ in writing within 24-hours of determining that the biosolids will not be spread by the end of day 7, and no later than the close of business on Day 7. Notification shall include the biosolids source or sources and amounts, location of the site and reason for staging biosolids longer than seven days; and

c. Biosolids which have been staged for greater than seven days shall be spread or removed from the field as soon as field conditions that prohibit access to the field by loaders and spreaders no longer exist.

4. Staging shall be limited to the amount of biosolids specified in the NMP to be applied at the intended field.

5. Biosolids will be staged within the land application area of the field in which the biosolids will be applied or in a permitted field adjacent to the subject field, in a location selected to prevent runoff to waterways and drainage ditches.

6. Biosolids shall not be staged in the setback areas.

7. Biosolids shall not be staged overnight within 400 feet of an occupied dwelling unless the setback is reduced or waived with the written consent of the dwelling occupant and landowner.

8. Biosolids shall not be staged overnight within 200 feet of a property line unless the setback is reduced or waived with the written consent of the landowner.

9. Management practices, as described in the BSMP, shall be utilized as appropriate to prevent pollution of state waters by staged biosolids.

10. Staged biosolids are to be inspected by the certified land applier daily. After precipitation events of 0.1 inches or greater, inspections shall ensure that runoff controls are in good working order. Observed excessive slumping, erosion, or movement of biosolids is to be corrected within 24 hours. Any ponding at the site is to be eliminated and any malodor shall be addressed in accordance with the OCP. The certified land applier shall maintain documentation of the inspections of staged biosolids.

11. Staged biosolids shall be managed so as to prevent adverse impacts to water quality or public health.

D. If circumstances such as equipment breakdown and/or inclement weather preclude biosolids application after delivery then temporary on-site storage will be implemented after the 7 day staging allowance outline in section C above has ended. When biosolids storage is required then storage procedures outline in section “G. Biosolids Storage” listed below in this document will be followed.

E. Acceptable locations for biosolids off-loading are determined case-by-case by the Land Applicator or his designee. The proximity to adjoining property owners, elevation to avoid low spots, lack of slope, distance the application equipment must travel to apply the biosolids and availability of truck access are all considered. In all cases, off-loading sites are selected so as to maintain required buffer distances.

F. The mode of application will be surface application on pasture and hay fields and on cropped fields where the owner has adequate crop residue and wants to maintain a no till system. All applications will be in accordance with the site management restrictions addressed in Section D. (Site Restrictions).

G. To ensure adequate control of the application rate for each site, LCWA will measure the transport vehicle’s weight (vehicle weight (pounds) + 1 load of cake biosolids (pounds) – empty vehicle weight (pounds) = pounds of cake biosolids per load) and then using the percent solids from the annual sludge data and the known field site area (square footage) LCWA will calculate the loading rate applied to each acre. The transport vehicle weighing and sludge testing will be performed annually. The fields will be measured individually to determine area (square footage) as sludge application takes place allowing adjustment to application rates as needed to achieve the desired application rate.

H. A summary of Equipment to be employed and other information for de-watered biosolids application is as follows:

1. One transport vehicle with water tight tailgate.

2. One piece of land application equipment.

3. Operations will be discontinued during periods of wet weather causing soils to be saturated and will not resume until sufficient drying of fields has occurred.

4. The transport vehicles will be state inspected, licensed and appropriately marked as required for purpose of transporting the biosolids material.

5. All permit required site application loading limits will be followed while applying cake biosolids.

6. Sufficient drying time shall be allowed between subsequent applications.

I. Operations will be discontinued during periods of wet weather causing soils to be saturated and will not resume until sufficient drying of fields has occurred.

J. The transport vehicles will be state inspected, licensed and appropriately marked as required for the purpose of transporting the biosolids material. To prevent adherence of the biosolids to the transport vehicle tires and under carriage, drivers will avoid driving over fresh application sites and as needed will scrap tires and mud flaps of biosolids buildup after dumping the biosolids load before proceeding back to the roadway.

**F. Site Management**

The following “Site Management” practices shall be employed at all active biosolids land application sites:

**1. Infrequent Application** – If biosolids are applied to a field only once in a three-year period, biosolids may be applied such that the total crop needs for nitrogen is not exceeded during a one-year crop rotation period including the production and harvesting of two crops in succession within a consecutive 12-month growing season.

The NMP shall account for all sources of nutrients applied to the site, including existing residuals from prior nutrient applications.

An infrequent application at full agronomic rate will be restricted to provide no more than 10% of the CPLR for cadmium and lead in Part I.A.1.b per application.

**2. Depth to Bedrock or Restrictive Layers** – Biosolids/WTP residuals shall not be land applied where the depth from the ground surface to bedrock or restrictive layers is less than 18 inches.

**3. Depth to Ground Water** – Biosolids/WTP residuals application shall not be made during times when the seasonal high water table of the soil is within 18 inches of the ground surface. If USDA-NRCS soil survey information regarding depth of seasonal water table is not available, the water table depth shall be determined by soil characteristics or water table observations. If the soil survey or such evidence indicates that the seasonal water table can be less than 18 inches below the average ground surface, soil borings shall be conducted within seven days prior to land application operations during periods of high water table for the soil series present to verify the actual water table depth. The use of soil borings and water table depth verification may be required for such sites from November to May (during seasonal high water table elevations) of each year depending on soil type. Constructed channels (agricultural drainage ditches) may be utilized to remove surface water and lower the water table as necessary for crop production and site management.

**4. pH Management**

a. Biosolids/WTP residuals Cadmium > 21 mg/kg – The pH of the biosolids/WTP residuals and soil mixture shall be 6.0 s.u. or greater at the time of each biosolids/WTP residuals application if the biosolids/WTP residuals cadmium concentration is greater than or equal to 21 mg/kg. The soil pH must be properly tested and recorded prior to land application operations during which a pH change of one-half unit or more may occur within the zone of incorporation (i.e., use of biosolids/WTP residuals containing lime or other alkaline additives at 10% or more of dry solid weight).

b. Soil pH < 5.5 s.u. – When soil test pH is less than 5.5 s.u. the land shall be supplemented with lime at the recommended agronomic rate prior to or during biosolids/WTP residuals application if the biosolids/WTP residuals to be land applied have not been alkaline stabilized.

**5. Soil Potassium < 38 ppm** – When soil test potassium levels are less than 38 parts per million (Mehlich I analytical procedure or equivalent) the land shall be supplemented with potash at the recommended agronomic rate prior to or during biosolids/WTP residuals application.

**6. Equipment Calibration** – Application equipment shall be routinely calibrated as described in the BSMP.

**7. Liquid biosolids/WTP residuals** – Liquid biosolids/WTP residuals shall not be applied at rates exceeding 14,000 gallons per acre, per application. Sufficient drying times shall be allowed between subsequent applications. Application vehicles shall be designed for use on agricultural land.

**8. Grass Height** – Pasture and hay fields shall be grazed or clipped prior to land application, such that forage height is approximately six inches at the time of biosolids application.

**9. Uniform Application** – Biosolids/WTP residuals shall be applied such that uniform application is achieved. If application methods do not result in a uniform distribution of biosolids/WTP residuals, 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/WTP residuals.

**10. Odor Control by Incorporation** – Surface incorporation may be required on cropland by DEQ, or the local monitor with approval of DEQ, to mitigate malodors when incorporation is practicable and compatible with a soil conservation plan or contract meeting the standards and specifications of the USDA-NRCS.

**11. Slope Restrictions** – Biosolids/WTP residuals application timing and slope restrictions shall conform to criteria contained in regulations promulgated pursuant to § 10.1-104.2 of the Code of Virginia. Biosolids/WTP residuals shall not be applied to site slopes exceeding 15%, except where a specific slope was identified in the BSMP and the slope has been approved by DEQ to receive biosolids/WTP residuals.

**12. Snow Covered Ground** – Biosolids/WTP residuals may only be applied to snow covered ground if the snow cover does not exceed one inch and the snow and biosolids/WTP residuals are incorporated within 24 hours of application. If snow melts during biosolids/WTP residuals application, incorporation is not necessary.

**13. Setbacks**

1. The land application of biosolids/WTP residuals shall not occur within the following minimum setback distance requirements:

|  |  |
| --- | --- |
| MINIMUM SETBACK DISTANCE REQUIREMENTS (1) | |
| Adjacent Feature | Minimum Setback Distance (Feet) to  Land Application Area |
| Occupied dwelling | 200 (2), (3), (4) |
| Odor sensitive receptors  (without injection or same day incorporation) | 400 (4) |
| Odor sensitive receptors  (with injection or same day incorporation) | 200 |
| Property lines | 100 (3), (5) |
| Property lines of publicly accessible sites (6) | 200 |
| Water supply wells or springs | 100 |
| Public water supply reservoirs | 400 |
| All segments of streams and tributaries designated as a Public Water  Supply under the Board’s Water Quality Standards | 100 |
| Surface waters without a vegetated buffer | 100 |
| Surface waters with a 35-foot vegetated buffer | 35 |
| Agricultural drainage ditches | 10 |
| All improved roadways | 10 |
| Rock outcrops | 25 |
| Open sinkholes | 100 |
| Limestone rock outcrops and closed sinkholes (7) | 50 |
| In cases where more than one setback distance is involved, the most restrictive distance governs.  The setback distance to occupied dwellings may be reduced or waived with the written consent of the occupant and landowner of the dwelling.  DEQ shall grant to any landowner or resident in the vicinity of a biosolids land application site an extended setback of up to 200 feet from their property line and up to 400 feet from their occupied dwelling upon request from their physician based on medical reasons. In order for an extended setback request to be granted, the request must be submitted to DEQ in writing on a form provided by DEQ. A request must be received by DEQ no later than 48 hours before land application commences on the field affected by the extended setback, and communicated by DEQ staff to the permittee no later than 24 hours before land application commences on the field affected by the extended setback. DEQ may extend a setback distance within 48 hours of land application if requested by the Virginia Department of Health in connection with the landowner or resident's physician.  Setback distances may be extended beyond 400 feet where an evaluation by the Virginia Department of Health determines that a setback in excess of 400 feet is necessary to prevent specific and immediate injury to the health of an individual.  The setback distance to property lines may be reduced or waived upon written consent of the landowner.  Publicly accessible sites are open to the general public and routinely accommodate pedestrians and include, but are not limited to, schools, churches, hospitals, parks, nature trails, businesses open to the public and sidewalks. Temporary structures, public roads or similar thoroughfares are not considered publicly accessible.  A closed sinkhole does not have an open conduit to groundwater. The setback from a closed sinkhole may be reduced or waived by DEQ upon evaluation by a professional soil scientist. | |

2. Increased setback distances may be required based on site specific features, such as agricultural drainage features and site slopes.

3. Waivers from adjacent property residents and landowners may only be used to reduce setback distances from occupied private residences and property lines. The setback from an odor sensitive receptor or a publicly accessible site may not be waived.

4. Voluntary extensions of setback distances – If a permittee negotiates a voluntary agreement with a landowner or resident to extend setback distances or add other more restrictive criteria than required by this regulation, the permittee shall document the agreement in writing and provide the agreement to the DEQ - NRO. Voluntary setback increases or other management criteria will not become an enforceable part of the land application permit unless the permittee modifies the BSMP to include the additional restriction.

**G. Site Access Restrictions:**

|  |  |  |
| --- | --- | --- |
| TIME RESTRICTIONS FOLLOWING COMPLETION OF BIOSOLIDS APPLICATION  ASSOCIATED WITH CLASS B PATHOGEN REDUCTION | | |
|  | Type of Application | |
|  | Surface (1) | Injection or Incorporation (2) |
| Control of access to sites with high potential for public contact | 12 months | 12 months |
| Control of access to sites with low potential for public contact | 30 days | 30 days |
| Time lapse required before above ground food crops with  harvested parts that touch the biosolids/soil mixture can be harvested | 14 months | 14 months |
| Time lapse before food crops with harvested parts below the land surface can be harvested | 20 months | 38 months |
| Harvesting food crops, feed crops and fiber crops | 30 days | 30 days |
| Harvesting feed crops for lactating dairy animals | 60 days | 60 days |
| Grazing by farm animals | 30 days | 30 days |
| Grazing by lactating dairy animals | 60 days | 60 days |
| Harvesting turf for placement on land with a high potential for public exposure or a lawn | 12 months | 12 months |
| Remains on land surface for four months or longer prior to incorporation.  Remains on land surface for less than four months prior to incorporation. | | |

**H. Forestland (Silviculture):**

1. The soil pH shall be managed at the natural soil pH for the types of trees growing in the area to which biosolids/WTP residuals are to be applied;

2. The soil test potassium level is not required to be at a minimum level at the time of biosolids application on silviculture sites;

3. Biosolids/WTP residuals application rates shall be in accordance with the BSMP, which shall include information provided by the Virginia Department of Forestry;

4. High pressure spray shall not be utilized if public activity is occurring within 1,500 feet downwind of the application site;

5. Biosolids/WTP residuals application vehicles shall have adequate ground clearance to be suitable for silvicultural field use;

6. Application scheduling included in the BSMP shall take into account rainfall and periods of freezing conditions; and

7. Monitoring requirements shall be site specific and may include groundwater, surface water or soils, for frequent application sites.

**I. Cumulative Pollutant Loading Rate (CPLR)** **Biosolids:**

1. Before biosolids subject to the CPLRs in Part I.A.1.b are applied to the land, the person who proposes to apply the biosolids shall contact DEQ to determine whether biosolids subject to the CPLRs in 9VAC25-32-356 [Table 3] have been applied to the site since July 20, 1993.

a. If biosolids subject to the CPLRs in 9VAC25-32-356 has not been applied to the site since July 20, 1993, the cumulative amount of each pollutant listed in Part I.A.1.b may be applied to the site, in accordance with the limits in Part I.A.1.b.

b. If biosolids subject to the CPLRs in 9VAC25-32-356 has been applied to the site since July 20, 1993, and the cumulative amount of each pollutant applied to the site in the biosolids since that date is known, the cumulative amount of each pollutant applied to the site shall be used to determine the additional amount of each pollutant that can be applied to the site in accordance with the limits in Part I.A.1.b.

c. If biosolids subject to the CPLRs in 9VAC25-31-356 has been applied to the site since July 20, 1993, and the cumulative amount of each pollutant applied to the site in the biosolids since that date is not known, no additional biosolids containing the pollutants listed in Part I.A.1.b shall be applied to the site.

2. Any person who proposes to apply biosolids subject to the CPLRs in Part I.A.1.b to the land shall provide written notice, prior to the initial application of biosolids to the land application site by the applier, to DEQ and DEQ shall retain the notice. The notice shall include:

a. The location, by either street address or latitude and longitude, of the land application site; and

b. The name, address, telephone number of the permittee applying the biosolids, and Virginia Pollution Abatement permit number.

**J. OTHER SPECIAL CONDITIONS:**

**1. Biosolids/WTP Residuals Sources** – Only biosolids/WTP residuals from sources approved by the DEQ and identified in the BSMP may be land applied.

**2. Land Application Sites** – Biosolids/WTP residuals shall be applied only at the sites identified in Appendix A.

**3. The permit holder must have and maintain pollution liability and general liability coverage in the amount of $2 million per occurrence with an annual aggregate of at least $2 million, exclusive of legal defense costs. The permit holder or applicant may demonstrate the required liability coverage by using one of the mechanisms specified below:**

a. A pollution liability policy as well as a general liability policy that covers all activities associated with the "Transport, Storage, and Land Application" of biosolids as specified in 9VAC25-32-790;

b. Passing a corporate financial test as specified in 9VAC25-32-800 or using the corporate guarantee for liability coverage as specified in 9VAC25-32-810;

c. Passing a local government financial test as specified in 9VAC25-32-820 or using the local government guarantee for liability coverage as specified in 9VAC25-32-830;

d. Obtaining a letter of credit for liability coverage as specified in 9VAC25-32-840; or

e. Obtaining a trust fund for liability coverage as specified in 9VAC25-32-850.

**4. Alteration of Biosolids Composition** – No person shall alter the composition of biosolids at a site approved for land application of biosolids under a Virginia Pollution Abatement Permit. The addition of lime or deodorants to biosolids that have been treated to meet standards for land application as required by Part IX of the VPA Permit Regulation (9VAC25-32-303 et seq.) shall not constitute alteration of the composition of biosolids.

**5. Site Specific Application Rates** – Site specific application rates shall not exceed the CPLR Limitations in Part I.A.1.b or the rates established in the NMP.

**6. Landowner Consent** –

a. The Permittee shall maintain valid landowner consent forms for all sites identified in Attachment A of this permit and prevent from improper concurrent use of the land application site. In order for a landowner consent form to be valid:

1) It must be on Form D, Part D-VI Land Application Agreement – Biosolids and Industrial Residuals;

2) The agreement must be signed using the current approved form at the time the form is signed. (The landowner agreement is Part VI of the VPA Permit Application, Form D, Municipal Effluent); and

3) The form must be complete, and accurate.

b. If upon the modification date of this permit any landowner agreement required by this permit is signed by the landowner on a form other than Form D, Part D-VI Land Application Agreement – Biosolids and Industrial Residuals, revision 9/14/2012, then by May 10, 2014, the permittee shall notify such landowner by certified letter of the requirement to sign and submit a new landowner agreement. The letter shall instruct the landowner to sign and return the new landowner agreement, and shall advise the landowner that the permittee's receipt of such new landowner agreement is required prior to any future application of biosolids to the landowner's property. Attached with the letter, the permittee shall include Form D, Part D-VI Land Application Agreement – Biosolids and Industrial Residuals, revision 9/14/2012, the instructions for completing the landowner agreement and a DEQ Fact Sheet.

After May 10, 2014, no biosolids shall be land applied to land application sites for which a Form D, Part D-VI Land Application Agreement – Biosolids and Industrial Residuals, revision 9/14/2012 has not been completed and signed.

If the current Landowner Agreement(s) held between the Permittee and the landowner(s) was signed using Form D, Part D-VI Land Application Agreement – Biosolids and Industrial Residuals, revision 9/14/2012 prior to March 10, 2014, such notice does not need to be sent to that landowner(s).

c. New landowner agreements using the most current form provided by the Board shall be submitted to DEQ for proposed land application sites identified in each application for modification of this permit to add land application sites.

d. In the event of change of landownership, the permittee is responsible for obtaining and maintaining valid landowner agreements prior to further land application. The updated landowner agreement must be submitted to DEQ prior to land application or on site at the time of land application.

**7. Threatened and Endangered Species Protection** – No person shall apply biosolids/WTP residuals to the land if it is likely to adversely affect a threatened or endangered species listed in 4VAC15-20-130 and § 4 of the Endangered Species Act (16 USC § 1533) or if the land application is likely to adversely affect its designated critical habitat.

**8. Certified Land Applicator Requirement** –

a. The permittee shall ensure that no biosolids land application activities occur unless a Certified Land Applicator (9VAC25-32-690 – 760) is onsite at all times during such land application. Certified Land Applicators may be considered to be onsite if they are at the site permitted for land application and, if it is necessary to leave the site, they are available within 30 minutes to return to the site to verify and ensure that land application of biosolids is in compliance with the permit.

b. Certified Land Applicators shall possess the site-specific permit information necessary to conduct land application on the site in accordance with the issued permit and make available at the land application site proper identification, including their certificate number issued by DEQ.

c. The Certified Land Applicator shall maintain an operator field log to document at minimum:

1) site location;

2) arrival and departure times;

3) inspectors or any visitors to the site;

4) complaints received; and

5) any unusual condition or event at the application site.

The field log shall be available for inspection by DEQ.

d. The Certified Land Applicator(s) shall provide a signed statement(s) to be submitted with the monthly report in accordance with 9VAC25-32-690.A. The statement shall include:

1) The name and certificate number of the Certified Land Applicators responsible for the application activity; and

2) The following statement attesting that they were onsite at the times of the reported operations and that those operations were in compliance with the permit:

I hereby confirm that I was onsite at the reported times of operations for which I was the Certified Land Applicator in charge. All land application activities and onsite operations conducted under VPA Permit # VPA00074 were in compliance with the permit [with the following exception(s):\_\_\_\_\_\_\_\_\_\_\_\_\_]\_. I attest that the above statement is true and valid to the best of my knowledge.

9. The Board will modify or, alternatively, revoke and reissue this permit as appropriate and necessary to incorporate changes to any applicable standard or requirement for the use or disposal of biosolids, industrial wastewater sludge, or septage promulgated under Section 405(d) of the Clean Water Act, the State Water Control Law, or 9VAC 25-32-10, et seq., of the Virginia Pollutant Abatement Permit Regulation.

10. All pollutant management activities covered under this permit shall maintain no point source discharge of pollutants to surface waters except in the case of a storm event greater than the 25-year, 24-hour storm. The operation of the facilities of the owner permitted herein shall not contravene the Water Quality Standards, as adopted and amended by the Board, or any provision of the Water Control Law.

11. Any and all product, materials, industrial wastes, and/or other wastes resulting from the purchase, sale, mining, extraction, transport, preparation, and/or storage of raw or intermediate materials, final product, by-product or wastes, shall be handled, disposed of, and/or stored in such a manner so as not to permit a discharge of such product, materials, industrial wastes, and/or other wastes to State waters, except as expressly authorized.

**K. Biosolids Storage:**

**1. Routine Storage:**

a. LCWA does not routinely store sludge. As sludge is produced from the dewatering processes of each wastewater treatment plant (Regional and Zion Crossroads) it is immediately hauled to the application site for land application or disposed of at the Louisa County Landfill. If weather prevents land application of the sludge, then the wastewater treatment plants will not dewater their sludge until weather permits field access.

b. On-site Storage – Biosolids may be stored for up to 45 days on a constructed surface at a location preapproved by DEQ. These stored biosolids shall be applied only to sites under the operational control of the same owner or operator of the site where the on-site storage is located.

c. Operational requirements for on-site storage include the following:

1) The certified land applier shall notify DEQ within the same working day whenever it is necessary to implement on-site storage. Notification shall include the source(s), location, and amount(s) of biosolids to be stored;

2) Storage shall be limited to the amount of biosolids specified in the NMP to be applied at sites under the operational control of the same owner or operator of the site where the on-site storage is located;

3) If malodors related to the stored biosolids are verified by DEQ at any occupied dwelling on surrounding property, the problem shall be corrected within 48 hours following DEQ’s notification to the permittee, or the biosolids must be removed from the storage site;

4) All biosolids stored on the on-site storage pad shall be land applied by the 45th day, including the first day of on-site storage;

5) Best management practices shall be utilized as appropriate to prevent contact of the biosolids with storm water run on or runoff;

6) The certified land applier shall inspect the stored biosolids at least every seven days and after precipitation events of 0.1 inches or greater to ensure that runoff controls are in good working order. The certified land applier shall maintain documentation of inspections of stored biosolids;

7) Observed excessive slumping, erosion, or movement of biosolids is to be corrected within 24 hours. Any ponding or malodor at the storage site is to be eliminated and any malodor shall be addressed in accordance with the OCP. The certified land applier shall maintain documentation of the conditions observed and the corrective actions taken; and

8) Storage of biosolids shall be managed so as to prevent adverse impacts to water quality or public health.

**L. Biosolids Application Control:**

LCWA operations personnel have multiple roles in the land application process. Because of the relatively small size of the organization and the low volume of biosolids produced per year, the same employee may drive the transport truck, operate the land application equipment and manage the site. All of the site management and land application of biosolids will be the responsibility of the Land Applicator. The Land Applicator will hold a current Land Applicators permit and will be trained to effectively manage the site, equipment and application of biosolids as outlined in permit VPA00074 and Sections II and III of this document.

**M. Transportation Routes:**

The transport vehicles will employ the most direct routes to the various land application sites as influenced by traffic conditions and restricted bridges or roadways. Main highways will be utilized whenever possible.

**N. Biosolids Spill Control and Prevention:**

1. In the event of a spill, LCWA will take the following actions immediately:

a. Halt source of spill by taking action that stops further release. Use of any leaking or damaged equipment will cease immediately. The equipment will be repaired before returning to service.

b. Contain spill to prevent spreading or movement away from spill site. In the event that large amounts of biosolids have been spilled, straw bales will be used when available to form a barrier or to prevent liquids from escaping the site.

c. Clean-up spilled material and containment mechanisms. Depending on the type and amount of biosolids spilled, a variety of equipment may be used to remove the biosolids. LCWA has a Septic Pump Truck, tractors, brooms, shovels and other various types of equipment that may be used to clean-up a biosolids spill. Any biosolids removed from a spill site will be taken to an approved land application site and spread or disposed of in the Louisa County Landfill.

d. Final Clean-up. If any spill occurs on a roadway, that roadway will be flushed with water as needed, immediately after biosolids are removed, to completely clean the surface.

e. Management of clean-up efforts. The Land Applicator shall take immediate charge and initiate clean-up activities for any spill. The Land Applicator will communicate with any additional personnel on-site for clean-up purposes as is necessary to answer any questions and advising of clean-up activities.

f. Reporting. The Land Applicator shall notify the LCWA, General Manager immediately of any biosolids spills. They will relay all relevant information regarding the spill, including how it occurred and the remedial action taken. All spills will be reported as soon as possible by telephone to the DEQ-NRO office. A written report of the incident will follow within 5 days.

g. Spill Prevention. Transport vehicle drivers shall take the following steps:

1) Wash off any biosolids deposited on the outside of the truck during the biosolids loading process prior to leaving the wastewater treatment plant.

2) Ensure tank hatches, trailer hatches and end gates are closed and latched prior to leaving the wastewater treatment plant.

3) Inspect tank hatches monthly and replace parts as necessary and inspect integrity of tailgate seals periodically and replace as necessary.

h. The Land Applicator shall take the following steps:

1) Check trucks arriving at the field to determine if they have been washed off prior to leaving the wastewater treatment plant.

2) Check to see that trucks arriving at the field have tank hatches and end gates that are closed and latched.

3) Check trucks arriving at the field for any leakage from tank hatches or end gates. Ensure that any leaking or damaged units are not reloaded until the truck has been repaired.

**O. Biosolids Limitations and Monitoring:**

**1. WATER TREATMENT PLANT (WTP) RESIDUALS** – LCWA is authorized to manage WTP Residuals in accordance with 9VAC25-32-10 et seq. and as detailed in the VPA00074 Permit and this Operations and Maintenance Manual.

a. Pollutants in the WTP Residuals that are land applied shall be monitored and limited as specified below: 🞈🞎

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| BIOSOLIDS CHARACTERISTICS | PC/CPLR  Criteria | | LIMITATIONS | MONITORING REQUIREMENTS | |
|  | Monthly Average (mg/kg)\* 🟅 | Monthly Average (mg/kg)\* 🟅 | Ceiling Concentration Maximum (mg/kg)\* ★ | Frequency | Sample Type |
| Percent Solids (%) | N/A | N/L | N/A | \*\*\*\* | Composite |
| Volatile Solids (%) | N/A | N/L | N/A | \*\*\*\* | Composite |
| Total Arsenic \*\*\* | 41\*\*\* | N/A | 75 | \*\*\*\* | Composite |
| Total Cadmium \*\*\* | 39\*\*\* | N/A | 85 | \*\*\*\* | Composite |
| Total Copper \*\*\* | 1,500\*\*\* | N/A | 4,300 | \*\*\*\* | Composite |
| Total Lead \*\*\* | 300\*\*\* | N/A | 840 | \*\*\*\* | Composite |
| Total Mercury \*\*\* | 17\*\*\* | N/A | 57 | \*\*\*\* | Composite |
| Total Molybdenum \*\*\* | N/A | N/A | 75 | \*\*\*\* | Composite |
| Total Nickel \*\*\* | 420\*\*\* | N/A | 420 | \*\*\*\* | Composite |
| Total Selenium \*\*\* | 100\*\*\* | N/A | 100 | \*\*\*\* | Composite |
| Total Zinc \*\*\* | 2,800\*\*\* | N/A | 7,500 | \*\*\*\* | Composite |
| TKN (%) | N/A | N/L | N/A | \*\*\*\* | Composite |
| Ammonium Nitrogen (%) | N/A | N/L | N/A | \*\*\*\* | Composite |
| Nitrate Nitrogen (%) | N/A | N/L | N/A | \*\*\*\* | Composite |
| Total P (%) | N/A | N/L | N/A | \*\*\*\* | Composite |
| Total K (%) | N/A | N/L | N/A | \*\*\*\* | Composite |
| pH (Std. Units) | N/A | N/L | N/A | \*\*\*\* | Composite |
| CCE\*\* as CaCO3 (%) | N/A | | N/L | N/A | |
| Total Aluminum (mg/kg) | N/A | N/L | N/A | \*\*\*\* | Composite |
|  |  |  |  | \*\*\*\*\* | Composite |

N/L = No limitations, monitoring is required

N/A = Not applicable

\* Dry weight basis, unless otherwise stated

\*\* CCE is Calcium Carbonate Equivalence (CCE)

\*\*\* Constituents subject to cumulative pollutant loading rates (CPLR), pollutant concentrations (PC) and ceiling limits. (PC biosolids contain the constituents identified above with concentrations below the monthly average specified in VPA00074 Permit, Part I.A.1. If the concentration of any of these constituents in biosolids from any source exceeds the monthly average concentration, then the biosolids from the source are subject to CPLR rules and tracking (VPA00074 Permit, Part I.A.2. and Part I.E.6 – 11).

\*\*\*\* Frequency of sampling biosolids from each generator is based on the amount of biosolids produced by that generator that is land applied:

|  |  |
| --- | --- |
| Amount of biosolids (dry tons per 365-day period)🞊 | Sampling Frequency |
| Greater than zero but less than 320 | Once per year |
| Equal to or greater than 320 but less than 1,653 | Once per quarter (four times per year) |
| Equal to or greater than 1,653 but less than 16,535 | Once per 60 days (six times per year) |
| Equal to or greater than 16,535 | Once per month (12 times per year) |
| Note: Either the amount of bulk biosolids applied to the land or the amount of sewage sludge received by a person who prepares biosolids that is sold or given away in a bag or other container for application to the land (dry weight basis). | |

\*\*\*\*\* Monitoring applies only to WTP residuals. Sampling shall be performed once per year.

🞈 The results of the Biosolids/WTP Residuals monitoring specified above shall be submitted electronically (VPA00074 Permit, Part I.B.2) with the monthly activity report.

🞎 The results of the Biosolids/WTP Residuals monitoring specified above shall also be included in the annual report (VPA00074 Permit, Part I.B.3). The monitoring results may be submitted using the VPA Biosolids/WTP Residuals Monitoring Report Forms provided. The report shall include a certification statement signed in accordance with VPA00074 Permit, Part II.K.

🟅 Monthly average shall be reported as the average of the results of all samples collected within a calendar month and analyzed using an approved method, in accordance with VPA00074 Permit, Part II.C.3 of the permit. For monitoring periods which include multiple months, if one sample is collected during the monitoring period, that result shall be reported as the monthly average. If samples are collected in different months during the monitoring period, each monthly average shall be calculated and the highest monthly average reported. Individual results and calculations shall be submitted with the report.

★ The maximum concentration shall be reported as the highest single result from sampling during a monitoring period. If the concentration of any single sample of biosolids exceeds the Ceiling Limit for any parameter, the biosolids shall not be land applied.

🞊 LCWA shall ensure that all Biosolids/WTP Residuals land applied in Virginia are monitored in accordance with the monitoring requirements in VPA00074 Permit, Part I.A. However, the monitoring may be conducted by the generator of the Biosolids/WTP Residuals and provided to LCWA.

b. All samples shall be collected and analyzed in accordance with Title 40 Code of Federal Regulations Parts 503 and 136. Samples taken as required by this permit shall be analyzed in accordance with 1VAC30-45, Certification for Noncommercial Environmental Laboratories, or 1VAC30-46, Accreditation for Commercial Environmental Laboratories.

c. Pathogen Reduction Limitations: Biosolids land applied in Virginia shall comply with one of the applicable Class B pathogen reduction alternatives specified in 9 VAC 25-32-440.D. LCWA shall identify the alternative used in the annual report and provide the data that demonstrate compliance with the applicable alternative.

d. Vector Attraction Reduction Limitations: Biosolids land applied in Virginia shall comply with one of the applicable vector attraction reduction alternatives specified in 9 VAC 25- 32-440.D. LCWA shall identify the alternative used in the annual report and provide the data that demonstrate compliance with the applicable alternative.

e. The maximum lifetime Aluminum loading rate cannot exceed the EPA recommended 4,113 lb/acre.

**2. WASTEWATER PLANT BIOSOLIDS** – LCWA is authorized to manage Biosolids in accordance with 9VAC25-32-10 et seq. and as detailed in the VPA00074 Permit and this Operations and Maintenance Manual. If the concentration of any of these constituents in biosolids from any source exceeds the monthly average pollutant concentration in VPA00074 Permit, Part I.A.1., then the biosolids from the source are subject to CPLR rules and tracking (VPA00074 Permit, Part I.E.6-11) and the cumulative pollutant loading at each site shall be limited by LCWA as specified below\*:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BIOSOLIDS CHARACTERISTICS | Limitations  Maximum Cumulative Pollutant Loading Rate\*\* | | MONITORING REQUIREMENTS | |
|  | Kg/Hectacre | Lbs/Acre | Frequency | Sample Type |
| Total Arsenic \*\*\* | 41 | 36 | Each Application | Calculated |
| Total Cadmium \*\*\* | 39 | 35 | Each Application | Calculated |
| Total Copper \*\*\* | 1,500 | 1,340 | Each Application | Calculated |
| Total Lead \*\*\* | 300 | 270 | Each Application | Calculated |
| Total Mercury \*\*\* | 17 | 16 | Each Application | Calculated |
| Total Molybdenum \*\*\* | N/A | NA | Each Application | Calculated |
| Total Nickel \*\*\* | 420 | 375 | Each Application | Calculated |
| Total Selenium \*\*\* | 100 | 89 | Each Application | Calculated |
| Total Zinc \*\*\* | 2,800 | 2,500 | Each Application | Calculated |

NA = Not applicable

\* No person shall apply bulk biosolids subject to the cumulative pollutant loading rates identified above to agricultural land, forest, a public contact site, or a reclamation site if any of the cumulative pollutant loading rates identified above has been reached.

\*\* The Cumulative Pollutant Loading Rate is the maximum cumulative application of trace elements that can be applied to soils used for crop production. The maximum cumulative application rate is limited for all ranges of cat ion exchange capacity due to soil background pH in Virginia of less than 6.5 SU and lack of regulatory controls of soil pH adjustment after biosolids application ceases.

\*\*\* Constituents subject to cumulative pollutant loading rates, pollutant concentrations (PC) and ceiling limits. (PC biosolids are those with concentrations of these constituents below the monthly average specified in the VPA00074 Permit, Part I.A.1.)

**3. SOIL** – LCWA is authorized to manage Biosolids in accordance with 9VAC25-32-10 et seq. and as detailed in the VPA00074 Permit and this Operations and Maintenance Manual. The soil shall be monitored by LCWA as specified below:

|  |  |  |  |
| --- | --- | --- | --- |
| PARAMETERS | LIMITATIONS | MONITORING REQUIREMENTS | |
| Frequency | Sample Type |
| Soil pH (Std. Units) | N/L | Prior to biosolids application\* | Composite\*\*\* |
| Cation Exchange Capacity (meq/100) | N/L | Prior to biosolids application\*\* | Composite\*\*\* |
| Available Phosphorus (mg/kg) | N/L | Prior to biosolids application\*\* | Composite\*\*\* |
| Exchangeable Potassium (mg/kg) | N/L | Prior to biosolids application\*\* | Composite\*\*\* |
| Exchangeable Magnesium (mg/kg) | N/L | Prior to biosolids application\*\* | Composite\*\*\* |

NL = No Limitation, monitoring is required

\* For Biosolids/WTP Residuals with cadmium concentration greater than or equal to 21 mg/kg the soil pH sample must be less than one year old; refer to VPA00074 Permit, Part I.D.17.

\*\* Soil samples shall be collected and analyzed no more than 3 years prior to the biosolids application.

\*\*\* 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.

a. Results of the soil monitoring specified above shall be used to develop the Nutrient Management Plan in accordance with VPA00074 Permit, Part I.D.4. Submission of a separate monitoring report is not required.

b. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following locations:

1) All land application sites that receive biosolids through the VPA00074 permit.

c. Sampling shall be performed as outlined in the VPA00074 Permit, this Operation and Maintenance Manual and the Nutrient Management Plan for each site.

d. Except for pH, all parameters are reported on a dry weight basis.

e. Soil testing used to develop a Nutrient Management Plan must be conducted by a DCR approved laboratory in accordance with the Virginia Nutrient Management Standards and Criteria. Samples taken shall be analyzed in accordance with 1VAC30-45, Certification for Noncommercial Environmental Laboratories, or 1VAC30- 46, Accreditation for Commercial Environmental Laboratories.

**P. Monitoring and Reporting:**

**1. Monitoring** - The results of the Biosolids/WTP Residuals monitoring specified in VPA00074 Permit, Part I.A.1 shall be submitted to the Northern Regional Office (NRO) and the DEQ- Office of Land Application (OLAP) with the monthly activity report (VPA00074 Permit, Part B.2.) not later than the 15th day of the month after monitoring takes place. Supporting documentation, including laboratory chain of custody forms and certificates of analyses, shall be included with the report.

**2. Monthly Activity Report** - LCWA shall submit, a monthly activity report to the DEQ-NRO and DEQ-OLAP by the 15th day of the month, for land application activities that occurred in the previous calendar month. The monthly activity report shall include the following information:

a. Name of Permittee, DEQ permit number and dates of activity;

b. Name and certificate number of the certified land applicators with a signed statement attesting that they were onsite at the times of the reported applications and that those applications were in compliance with the permit;

c. Identification of land application sites, including the county where taxes are remitted and permitted site identification name, letters and numbers, as appropriate;

d. The source of Biosolids/WTP Residuals and approximate field area (reported to the nearest 0.1 acres) receiving those Biosolids/WTP Residuals;

e. The amount of Biosolids/WTP Residuals applied in dry tons and the method and calculations used to determine the reported value. Dry ton value shall be reported to the nearest 0.01 dry tons;

f. Dates and type of any interactions with local monitors and names of individuals involved in the interactions;

g. Name of responsible representative of permittee and a statement signed and dated by that representative indicating that the information submitted has been verified by that representative as correctly reported in accordance with the Part II.K;

1) Presentation of the calculation of the total fee;

2) A summary list of the total amount of Biosolids/WTP Residuals applied and the calculated fee broken down by County, presented in alphabetical order by county; and Biosolids/WTP Residuals Loading - for each application of Biosolids/WTP Residuals to an application site, LCWA shall submit in the monthly Biosolids/WTP Residuals monitoring report, the concentration of PAN and P2O5 (as pounds per dry ton) in the Biosolids/WTP Residuals and the amount of PAN and P2O5 (as pounds per acre) applied to the site from the Biosolids/WTP Residuals.

3) Biosolids Land Application Fee - LCWA shall remit to the DEQ a fee of $7.50 per dry ton of Biosolids applied in the Commonwealth of Virginia.

a. LCWA shall collect this fee from the facilities that generated the biosolids applied.

b. Upon reviewing the report in VPA00074 Permit, Part I.B.2., DEQ will notify LCWA of the fee that is due and set a due date. Failure to submit payment within 60 days of notification by DEQ of the fee due may result in the permit being revoked or approved sources being reclassified as unapproved.

c. The check or money order shall be payable to the “Treasurer of Virginia”, and mailed with the invoice to:

Department of Environmental Quality Receipts Control

P.O. Box 1104

Richmond, VA 23218

4) Annual Report - LCWA shall submit an Annual Report not later than February 19th of each year to the DEQ-NRO. Each report is for the previous calendar year's activity. If no Biosolids/WTP Residuals are applied to the land during the reported period, then the report shall include at minimum:

a. Biosolids/WTP Residuals Monitoring Reports as required by Part I.A.1, certified and signed in accordance with Part II.K;

b. A summary of Biosolids/WTP Residuals disposal contracts currently held as well as any other biosolids, residuals, or sludge’s currently being handled;

c. A summary of approved biosolids storage facilities including the capacity at each facility which is dedicated for a particular biosolids. Provide the amount of remaining storage capacity;

d. A summary of land application sites completed in the last year including, by county, the source, dry tons, field designation, acres and the date of last application;

e. A summary of any partially completed land application sites including the date of last application; and

f. The total acreage of permitted land application sites available for use in the next calendar year.

5) Records Retention - LCWA shall retain records of all monitoring information pertaining to Biosolids/WTP Residuals and land application, including all calibration and maintenance records, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 5 years from the date of the sample, measurement, report or application, unless otherwise specified in this permit. This period of retention may be extended by request of the Board at any time.

**APPENDIX A**

**LOCATION DESCRIPTION:**

**Detailed field information is located in the information submitted with the permit application.**

**Louisa County**

|  |  |  |  |
| --- | --- | --- | --- |
| SITE ID | FIELD ID | GROSS ACRES | TAX MAP |
| Dean & Sandra Rodgers 1 Field  40 Gross Acres | 2 | 40.0 | 69-9-3 |
| Charles & Ada Winston 11 Fields  304 Gross Acres | 1  2  3  4  5  6  7  8  9  10  11 | 27.0  20.5  21.0  28.0  10.5  7.0  9.0  27.5  15.0  6.0  11.0 | 26-1-1  26-1-1  26-1-1  26-1-1  26-3-3  26-1-1  26-3-3  26-3-3  26-3-3  26-3-3  26-3-3 |
| Louisa County | 1 | 4.5 | 36-22 |
| 2 | 20.0 |
| 5 Fields | 3 | 50.0 |
| 140 Gross Acres | 5 | 29.0 |
| 6 | 10.0 |
| Doug & Maren Smith 6 Fields  70.0 Gross Acres | 1 | 11.0 | 27-4 |
| 2 | 12.0 |
| 3  4 | 1.2  7.8 |
| 5 | 9.66 |
| 6 | 6.0 |
| TOTAL: 554 Gross Acres | | | |

#### **APPENDIX B**

##### Biosolid Sources:

The following are the approved Biosolid sources for the LCWA:

1. Louisa County Regional Wastewater Treatment Plant

131 Pine Ridge Drive

Louisa, VA 23093

Contact Person: Randy Gray, Chief Operator

Plant Phone #: (540) 967-0696

2. Zion Crossroads Wastewater Treatment Plant

323 Deer Run Drive

Gordonsville, VA 22942

Contact Person: Nancy Pugh, Chief Operator

Plant Phone #: (540) 832-3917

**APPENDIX C**

Louisa Regional WWTP Sludge Odor Control Plan

Louisa Regional WWTP VPDES/NPDES Permit Number

131 Pine Ridge Drive VA0067954

Louisa, VA 23093

Contact Name: Wesley Basore

Phone Number: (540) 967-1122 (office), (540) 894-3807 (cell)

Email address: wbasore@louisa.org

“Malodor” means an unusually strong or offensive odor associated with biosolids or sewage sludge as distinguished from odors commonly associated with biosolids or sewage sludge.

**Answer all 4 questions and check all methods that apply OR add alternative methods.**

**1) Identify methods used to minimize odor during production of biosolids:**

Vector Attraction Reduction Method:

At the Louisa Regional WWTP all sludge produced on-site is aerated in aerobic digesters prior to belt pressing for land application. The facility uses the aerobic 30 day bench test for Vector Attraction Reduction testing.

**2) Identify methods used to identify malodorous biosolids at the generating facility:**

- Wastewater treatment facility staff will periodically perform visual as well as odor observations of the biosolids being discharged from the belt press to ensure that nothing out of the ordinary is occurring during processing operations. If the solids appear to be off color or have unusual odors, these biosolids will be sent to the landfill.

- Volatile solids testing will be performed on cake samples. During collection of the solids staff will check for malodors. If the cake sample is malodorous then the biosolids will be sent to the landfill.

- Wastewater treatment facility staff will periodically observe loading operations to check odor conditions of biosolids.

**3) Identify methods used to identify and abate malodor after delivery to a land application site (before land application):**

The land application contractor’s (LCWA VPA 00074) personnel will perform a visual as well as odor observation of biosolids delivered to the land application sites. They will determine if any of the individual loads arriving on-site appear to be more odorous and darker in color than usual. If malodor of the biosolids is present, the contractor will confer with wastewater treatment plant staff and transport the biosolids to the landfill.

Contract land applicator will use methods identified in land applicator’s (LCWA VPA 00074) odor control plan.

**4) Identify methods used to abate malodor after land application:**

Contract land applicator (LCWA VPA 00074) will use methods identified in land applicator’s odor control plan.

**APPENDIX D**

Zion Crossroads WWTP Sludge Odor Control Plan

Zion Crossroads WWTP VPDES/NPDES Permit Number

323 Deer Run Drive VA0090743

Gordonsville, VA 22942

Contact Name: Wesley Basore

Phone Number: (540) 967-1122 (office), (540) 894-3807 (cell)

Email address: wbasore@louisa.org

“Malodor” means an unusually strong or offensive odor associated with biosolids or sewage sludge as distinguished from odors commonly associated with biosolids or sewage sludge.

**Answer all 4 questions and check all methods that apply OR add alternative methods.**

**1) Identify methods used to minimize odor during production of biosolids:**

Vector Attraction Reduction Method:

At the Zion Crossroads WWTP all sludge produced on-site is aerated in aerobic digesters prior to belt pressing for land application. The facility uses the aerobic 30 day bench test for Vector Attraction Reduction testing.

**2) Identify methods used to identify malodorous biosolids at the generating facility:**

- Wastewater treatment facility staff will periodically perform visual as well as odor observations of the biosolids being discharged from the belt press to ensure that nothing out of the ordinary is occurring during processing operations. If the solids appear to be off color or have unusual odors, these biosolids will be sent to the landfill.

- Volatile solids testing will be performed on cake samples. During collection of the solids staff will check for malodors. If the cake sample is malodorous then the biosolids will be sent to the landfill.

- Wastewater treatment facility staff will periodically observe loading operations to check odor conditions of biosolids.

**3) Identify methods used to identify and abate malodor after delivery to a land application site (before land application):**

The land application contractor’s (LCWA VPA 00074) personnel will perform a visual as well as odor observation of biosolids delivered to the land application sites. They will determine if any of the individual loads arriving on-site appear to be more odorous and darker in color than usual. If malodor of the biosolids is present, the contractor will confer with wastewater treatment plant staff and transport the biosolids to the landfill.

Contract land applicator will use methods identified in land applicator’s (LCWA VPA 00074) odor control plan.

**4) Identify methods used to abate malodor after land application:**

Contract land applicator (LCWA VPA 00074) will use methods identified in land applicator’s odor control plan.