

**250-RICR-150-10-3**

**TITLE 250 – DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**

**CHAPTER 150 – WATER RESOURCES**

**SUBCHAPTER 10 - WASTEWATER & STORMWATER**

PART 3 – Rules and Regulations for Sewage Sludge Management

## Table of Contents

3.1	Purpose	4
3.2	Authority	4
3.3	Applicability	4
3.4	Liberal Application	5
3.5	Definitions	5-11
3.6	Sludge Management Operations	11
3.7	Requirements for Order of Approval	11-16
3.8	Application for Order of Approval	16-19
3.9	Land Disposal	19-24
3.10	Land Application	24-29
3.11	Treatment of Sludge	29-33
3.12	Distribution and Land Application of Treated Sludge	33-42
3.13	Stockpiling	42-44
3.14	Transportation	44-45
3.15	Incineration	45
3.16	Co-Disposal of Sludge and Solid Waste	48-48
3.17	Ocean Disposal	49
3.18	Notification of Closure and Closure Procedure	49
3.19	Limited Access	49
3.20	Sludge Release	49-49
3.21	Existing Facilities or Sites	50
3.22	Variances	50
3.23	Denial, Suspension, Revocation of Approval	51-52

3.24	Penalties	52
3.25	Appeals	52-53
3.26	Severability	53
3.27	Superseded Rules and Regulations	53
3.28	Appendix 1 - Processes to Significantly Reduce Pathogens	53-54
3.29	Appendix 2 - Processes to Further Reduce Pathogens	54
3.30	Appendix 3 - Vector Attraction Reduction Requirements	54-56
3.31	Appendix 4 - Maximum Concentration of Contaminants for the Toxicity Characteristic Leachate Procedure	56-58
3.32	Appendix 5 - Class A Biosolids Limits	58-59
3.33	Appendix 6 - Class B Biosolids Limits and Characteristics	59-60
3.34	Appendix 7 – Maximum Cumulative Loading Rates	60-61

### **3.1 Purpose**

The purpose of these rules and regulations is to ensure that sewage sludge that is treated, land applied, disposed, distributed, stockpiled or transported in the State of Rhode Island is done so in a manner to protect public health and to avoid degradation of the environment. To achieve this purpose, these rules and regulations establish procedures governing the management of sludge.

### **3.2 Authority**

These rules and regulations are promulgated pursuant to the requirements and provisions of R.I. Gen. Laws Chapter 42-17.1, "Department of Environmental Management", Chapter 42-17.6, "Administrative Penalties for Environmental Violations", Chapter 46-12, "Water Pollution", Chapter 23-18.9, "Refuse Disposal", Chapter 23-19.1, "Hazardous Waste Management", and Chapter 42-35, "Administrative Procedures Act".

### **3.3 Applicability**

- A. These rules and regulations apply to all sludge generated by publicly owned treatment works or privately owned treatment works that is managed in the State of Rhode Island. All sludge generated by publicly owned treatment works or privately owned treatment works that enters the State of Rhode Island for the purpose of transportation only, shall also be subject to the transportation requirements of these rules and regulations.
- B. In addition to compliance with these rules and regulations, certain proposed facilities or sites may require compliance with legal requirements imposed by the federal government, other state agencies or offices within the Department and/or local governmental entities (governmental requirements). These rules and regulations are intended to be and should be interpreted to be consistent and/or complementary with said governmental requirements and any perceived conflicts are unintentional. Should a perceived conflict arise between or among these rules and regulations and the governmental requirements imposed by other departmental regulations or other governmental entities, the most stringent requirement shall govern.
- C. Byproducts or wastes from commercial or industrial treatment works that do not contain sewage sludge are not subject to these rules and regulations but may be subject to other applicable State and Federal regulations for solid waste or hazardous waste. Byproducts or wastes from commercial or industrial treatment works that contain sewage sludge may also be subject to applicable State and Federal regulations for solid waste or hazardous waste.

### **3.4 Liberal Application**

The terms and provisions of these rules and regulations shall be liberally construed to permit the Department to effectuate the purposes of state law, goals, and policies.

### **3.5 Definitions**

- A. For the purposes of these rules and regulations, the following terms shall have the following meanings:
1. "Abutter" means any person who owns property adjacent to, or across a road, railroad, or stream from a proposed facility or site.
  2. "Agricultural lands" means those lands utilized for or having the potential for the production of food crops, feed crops or fiber crops.
  3. "Agronomic rate" means the sludge application rate that is designed to provide the amount of nitrogen or other nutrient(s) needed by the crop or vegetation and minimize the amount of nitrogen that passes below the root zone of the crop or the vegetation to the groundwater.
  4. "Aquifer" means a geologic formation, group of formations, or part of a formation capable of yielding a significant amount of groundwater to wells and springs.
  5. "Applicant" means a person who applies for an Order of Approval or the Director's approval pursuant to these rules and regulations.
  6. "Beneficial use" means taking advantage of the nutrient content and/or soil conditioning properties of sludge by supplying agronomic or soil conditioning benefits such as nitrogen, phosphorus, micronutrients, or organic matter needs for crops, silviculture or establishing a vegetative cover for reclamation sites.
  7. "Bulk distribution" means the distribution of Class A Biosolids in a container greater than 100 pounds.
  8. "Bulking agent" means material such as sawdust, woodchips or yard trimmings which is added to the sludge to provide structure, lower total moisture content, allow air to reach and be held in small pockets by preventing settling and compaction of the sludge, and in some cases to act as a carbon source for composting operations.
  9. "Class A biosolids" means any treated sludge that meets the metals and pathogen limits established in § 3.32 of this Part.

10. "Class B biosolids" means any treated sludge that does not meet the metals limits established in § 3.32 of this Part but meets the metals limits established in § 3.33 of this Part.
11. "Class C biosolids" means any treated sludge that does not meet the metals limits established in § 3.33 of this Part.
12. "Closure" means the procedures used to cease the use of a facility, or a portion thereof, in a manner that will minimize future risks of environmental damage, and includes all post-closure inspection, monitoring, and maintenance activities.
13. "Composting" means the biological method of stabilizing organic residues through an aerobic, self-heating process.
14. "Cover" means soil or other approved material placed over sewage sludge in a land disposal site or sewage sludge or solid waste in a solid waste landfill.
15. "Department" means the Rhode Island Department of Environmental Management.
16. "Director" means the Director of the Department of Environmental Management or any designee to whom the Director delegates any powers and duties vested in that office.
17. "Disposal" means the final discharge, deposit, injection, dumping, mixing, spilling, leaking, incinerating, or placing of sludge into or onto any land so that such sludge or any constituent thereof may enter the environment, be emitted into the air or be discharged into any surface water or groundwater.
18. "Distributor" means any person who distributes or markets Class A Biosolids. Any person that receives and distributes or markets packaged Class A Biosolids exclusively is not considered a distributor.
19. "Facility" means any building, structure and operation, including land or appurtenances thereto, on one contiguous site used for the generation, processing or management of sludge. A facility includes, but is not limited to a publicly or privately owned treatment works, sludge treatment facility, sludge-only landfill (or monofill), sludge incinerator and site where sludge is treated, stockpiled or mixed with other sludge or other material for shipment off-site.
20. "Feed crops" means crops grown for consumption by animals.

21. "Fiber crops" means crops, such as flax or cotton that are cultivated for their fiber content and are not consumed by humans or by animals intended for human consumption.
22. "Flood plain" means that land area adjacent to a river which is, on the average, likely to be covered with flood water resulting from a 100 year frequency storm, and shall be that land so designated as flood plain on the U.S. Department of Housing and Urban Development Federal Insurance Administration Flood Hazard Boundary Map, currently administered by FEMA.
23. "Food crops" means crops, including tobacco, consumed by humans.
24. "Generator" means the person who holds title to a publicly owned treatment works or privately owned treatment works located in Rhode Island that produces sewage sludge or the facility or site located in Rhode Island where sludge is mixed or treated to produce another material.
25. "Groundwater" means water found underground which completely fills the open spaces between particles of soil and spaces within rock formations.
26. "Hazardous waste" means any waste as defined in accordance with R.I. Gen. Laws Chapters 23-19.1 and 23-19.4, and regulations adopted pursuant thereto.
27. "Incorporated into the soil" means the injection of liquid sludge beneath the surface of the soil or the mixing of sludge with the surface soil for beneficial use.
28. "Land application" or "land-applied" means the spraying or spreading of sludge onto the land surface; the injection of sludge below the land surface; or the incorporation of sludge into the soil so that the sludge can either condition the soil or fertilize crops or vegetation grown in the soil.
29. "Land disposal" or "land-disposed" means the burial of sludge in a sludge-only landfill (or monofill). Burial of sludge in a solid waste landfill is not considered land disposal.
30. "Lead free" means any sludge having no lead present or having lead present in amounts less than the standards established in the Rhode Island Department of Health "Rules and Regulations for Lead Poisoning Prevention".
31. "Lead safe" means any sludge, which pursuant to the Rhode Island Department of Health "Rules and Regulations for Lead Poisoning Prevention," poses no significant environmental lead exposure hazard despite having a lead concentration above that required for a designation as "lead free" (see § 3.5(A)(30) of this Part above).

32. "Management" or "manage" means the supervising, controlling, or undertaking of any sludge activity(ies) regulated under these rules and regulations including transporting, processing, land applying, disposing, stockpiling, treating or distributing of sludge.
33. "Monitoring well" means a cased and screened well that intercepts the groundwater and can be used to detect the presence of groundwater contamination. All monitoring wells are to be designed based on criteria established by the Department.
34. "Office of water resources" means the Office of Water Resources of the Department of Environmental Management.
35. "Operator" means the person in control of or having responsibility for managing the sludge activity(ies) at a facility, site or publicly or privately owned wastewater treatment facility.
36. "Order of approval" means a written document issued by the department, which authorizes the holder to manage a site or facility or transport sludge according to the terms of the document.
37. "Owner" means the person named on the Federal National Pollutant Discharge Elimination System (NPDES) or the Rhode Island Pollutant Discharge Elimination System (RIPDES) permit issued for a facility or the applicant named on the Order of Approval or the person holding title to a facility or site where sludge is generated and/or managed or is proposed to be generated and/or managed.
38. "Pathogen" means disease-causing organisms including, but not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.
39. "Person" means an individual, trust, firm, joint stock company, corporation (including a quasi-governmental corporation), partnership, association, syndicate, municipality, municipal or state agency, fire district, club, non-profit agency or any subdivision, commission, department, bureau, agency or department of state or federal government (including any quasi-governmental corporation) or of any interstate body.
40. "pH" means the logarithm of the reciprocal of the hydrogen ion concentration (base 10).
41. "Pollutant" means any dredged material, solid waste, incinerator residue, sewage, garbage, sewage sludge, sediment, filter backwash, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, industrial or municipal or agricultural waste or effluent, petroleum or petroleum products, including but not limited to oil; or any material which will likely alter the physical, chemical, biological or radiological characteristics and/or integrity of water.



42. "Private drinking water supply well" means any well established for the purpose of meeting all or part of a person's potable water needs provided said well does not supply a public drinking water supply.
43. "Privately owned treatment works" means any facility which is owned by a private individual or private party or corporation or other private entity and is used for the treatment of pollutants. This definition includes sewers, pipes if they convey wastewater to a privately owned treatment works as well as any equipment, buildings or machinery used in the treatment operation.
44. "Processing" means any activity that reduces the quantity of sludge or alters its chemical, biological, or physical state.
45. "Processes to significantly reduce pathogens" or "PSRPs" and "processes to further reduce pathogens" or "PFRPs" means the processes listed in §§ 3.28 and 3.29 of this Part, respectively, which will reduce pathogens in sludge.
46. "Public drinking water supply well" means any well supplying a water system with piped water for human consumption, provided that such a system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days of the year.
47. "Publicly owned treatment works" means any facility which is used for the treatment of pollutants and is owned by the state or any political subdivision thereof, municipality, or other public entity, including any quasi-governmental corporation. This definition includes sewers, pipes if they convey wastewater to a publicly owned treatment works and any equipment, buildings or machinery used in the treatment operation.
48. "Reclamation" means the addition of organic matter and nutrients to improve and/or promote establishment of vegetation on soils which have been severely disturbed or which are in a poor vegetative state.
49. "Septage" means either liquid or solid material removed from a septic tank, cesspool, portable toilet, marine sanitation device, or similar treatment works that receives only domestic sewage.
50. "Sewage" or "wastewater" means human waste, or wastes from toilets and other receptacles intended to receive or retain body waste, and any wastes, including wastes from human households, commercial establishments, and industries.
51. "Silviculture" means the growing or cultivation of forests.

52. "Site" means contiguous land areas owned by the same person(s) on which sludge is managed even if the land area is divided by a highway, railroad, water body, or boundary of a political subdivision.
53. "Sludge" or "sewage sludge" means residue, partially solid, or solid, treated or untreated, resulting from the treatment of sewage, including such residues from the cleaning of sewers, by processes, such as settling, flotation, filtration and centrifugation, that does not meet the criteria for a hazardous waste. Domestic septage is not considered sludge.
54. "Solid waste regulations" means the "Rules and Regulations for Solid Waste Management Facilities", Rhode Island Department of Environmental Management, Subchapter 05 Part 1 of this Chapter.
55. "Stockpiling" means the storage of sludge.
56. "Surface water" means any waters of the State that are not groundwaters.
57. "Toxicity characteristic leachate procedure" or "TCLP" means a quantitative analysis to determine hazardous characteristics as described in 40 C.F.R. § 261, Appendix II.
58. "Transporter" means any person engaged in the removal or transporting of sludge.
59. "Treated sludge" means sewage sludge that is treated by one or more of the methods listed in § 3.29 of this Part.
60. "Vector" means a carrier that is capable of transmitting a pathogen from one organism to another, including but not limited to flies and other insects, rodents, birds and other vermin.
61. "Waters of the state" or "the waters" means all surface water and groundwater of the State of Rhode Island, including all tidewaters, territorial seas, wetlands, land masses partially or wholly submerged in water, and both inter- and intra-state bodies of water which are, have been or will be used in commerce, by industry, for the harvesting of fish and shellfish or for recreational purposes.
62. "Well" means a bored, drilled or driven shaft or a dug hole, with a depth greater than its largest surface dimension, through which groundwater flows under natural or induced pressure.
63. "Wellhead protection area" means that portion of the ground surface and subsurface area surrounding a public well or wellfield through which water will move toward and reach such well or wellfield as designated by the Director in accordance with the Rhode Island Wellhead Protection Program.

64. "Wetlands" means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas. For freshwaters, wetlands are determined by the Office of Water Resources using the Rules and Regulations Governing the Enforcement and Administration of the Freshwater Wetlands Act, Subchapter 15 Part 1 of this Chapter. Coastal wetlands are determined by rules and regulations under the jurisdiction of the Coastal Resources Management Council.

### **3.6 Sludge Management Operations**

- A. The owner or operator of a facility or site is required to operate and maintain properly all equipment and systems used to achieve compliance with these rules and regulations. Proper operation and maintenance includes effective performance, adequate funding, adequate staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures.
- B. Upon any interruption in operations of the facility or site due to loss or reduction of power or other equipment failure, the owner or operator shall control management of the facility or site to the extent necessary to maintain compliance with these rules and regulations until such time as power or other equipment is restored or an alternative method of management is provided.
- C. The owner or operator shall take immediate action necessary to correct any noncompliance with these rules and regulations when such noncompliance may have an adverse effect on public health or the environment.
- D. The owner or operator shall notify the Office of Water Resources in writing, at least ninety (90) days prior to any alteration or modification of the facility or site, change in management practices of the facility or site, or any other activity which may result in noncompliance with these rules and regulations.
- E. The owner or operator shall immediately notify the Office of Water Resources of any substantial change in the volume or composition of sludge resulting from the introduction of pollutants into the facility or site. The notice shall include information on the quantity and composition of sludge, the source of the new pollutants or efforts made to discover the source, and any impacts on management practices resulting from the change.

### **3.7 Requirements for Order of Approval**

- A. The owner or operator of a facility or site must obtain an Order of Approval. The owner or operator of the facility or site must operate at all times in accordance

with the Order of Approval, the completed Application for Order of Approval and the Management Plan for the facility or site.

- B. Except as provided in § 3.7(C) of this Part below, an Order of Approval shall be required for:
1. The processing, treatment, transporting, land application, land disposal, co-disposal (of sludge and solid waste), incineration and/or distribution of sludge;
  2. All sludge mixing facilities and sites where the resultant sludge is to be used on site or off site;
  3. All sludge stockpiling facilities and sites; and,
  4. The closure of a land disposal facility or site.
- C. Unless the Director determines that an Order of Approval is necessary for a specific facility or site to protect public health and to avoid degradation of the environment, an Order of Approval shall not be required for:
1. The transportation of Class A Biosolids;
  2. The interstate transportation of sludge that is not generated, processed, transferred, stored, used or disposed of in the State of Rhode Island;
  3. Any site upon which Class A Biosolids is land applied for beneficial use which meets the following conditions:
    - a. The Class A Biosolids is generated by a facility that holds a valid Order of Approval from the Department to generate Class A Biosolids;
    - b. The owner of the site or the person land applying the Class A Biosolids is not the owner of the facility or site where the Class A Biosolids is generated;
    - c. The Class A Biosolids is stored at the land application site no longer than six (6) months prior to land application;
    - d. The quantity of Class A Biosolids stored at the land application site is consistent with the appropriate application rate and size of the land application area;
    - e. The stockpile area and land application area is not located within fifty (50) feet of any surface water;

- f. Adequate erosion control is used to prevent material from entering any waters of the state;
  - g. The site complies with Part 120-05-17 of this Title;
  - h. The person land applying the Class A Biosolids at the site possesses and follows a Department-approved User's Guide provided by the facility that generates the Class A Biosolids; and
  - i. Land application does not take place during the period starting on the first day of November and ending the last day of February.
- 4. Any Class A Biosolids distribution facility and/or mixing facility or site, such as a landscaping company or soil blending facility, or stockpile site which meets the following conditions:
  - a. The Class A Biosolids is generated by a facility that holds a valid Order of Approval from the Department to generate Class A Biosolids;
  - b. The owner of the site is not the owner of the facility or site where the Class A Biosolids is generated;
  - c. The facility or site is not located within 50 feet of a surface water body;
  - d. The amount of unmixed Class A Biosolids stockpiled at the site does not exceed 500 cubic yards at any one time (any mixed material that contains more than 40% Class A Biosolids by volume shall be considered unmixed for the purposes of this storage limit);
  - e. Other than the mixing of Class A Biosolids with soil or appropriate soil amendment materials, no further processing or treatment of the Class A Biosolids takes place at the facility or site;
  - f. The Class A Biosolids or mixed Class A Biosolids is intended for beneficial use;
  - g. If mixing takes place, the mixing process does not degrade the quality of the Class A Biosolids;
  - h. The site has adequate erosion control to prevent mixed or unmixed Class A Biosolids from entering waters of the state;
  - i. The site complies with Part 120-05-17 of this Title; and,
  - j. The owner or operator of the facility or site provides a department-approved User's Guide or information sheet to any person(s) that

receives unmixed Class A Biosolids from the facility or site pursuant to §§ 3.12(B)(2)(a) through (b) of this Part.

- D. An application for Order of Approval must be submitted at least ninety (90) days prior to the anticipated date of operation of any proposed facility or site. Said application must be accompanied by the appropriate application fee along with any plans, specifications and a Management Plan as stipulated in these rules and regulations. Where the facility or site is not owned by the applicant, certified copies of any lease or contracted agreements or other documentation acceptable to the Department providing the applicant with adequate authority to engage in the proposed activity at the subject facility or site must also be submitted. Where such information has been previously submitted to the Director and approved and where the applicant proposes to continue the previously approved means of sludge management or when utilizing an approved site, the Director may waive the requirement that additional plans, specifications and Management Plans accompany the application.
- E. A person may request approval from the Director to conduct a one-time pilot project for the beneficial use of no more than thirty (30) cubic yards of Class A Biosolids in those instances where the distributor that is to provide the Class A Biosolids does not hold an Order of Approval from the department to generate or distribute Class A Biosolids. Such a request must be submitted in writing and must include a description of the source of the sludge, lab analysis demonstrating that the sludge meets Class A Biosolids standards and a detailed description of the nature of the pilot project. An application fee is not required for such projects.
- F. The Director may require that the applicant provide notification of any Application for Order of Approval to all potentially affected parties as determined by the Director. At a minimum, the applicant may be required to notify all abutters of the proposed facility or site. The Commissioner may schedule a public hearing as required pursuant to R.I. Gen. Laws Chapter 42-35 to solicit public comment prior to rendering a decision on the application. The applicant shall be required to pay the expenses for notice and hearing.
- G. The owner or operator of an approved facility or site who seeks to change the treatment, disposal, distribution or land application methods, or who seeks to add facilities or sites, must apply for a new Order of Approval for such modifications at least ninety (90) days prior to the anticipated modification.
- H. The Department must issue an Order of Approval on an application for a proposed facility or site prior to implementation of the sludge treatment, stockpiling, land application, disposal or distribution at the facility or site. Said approval shall remain in full force and effect until terminated by the Director.
- I. In those instances where sludge management at a facility or site is delegated by the owner to another person, it shall remain the responsibility of the owner to

meet all requirements of these rules and regulations and to submit the necessary documents for the Director to issue an Order of Approval.

- J. Approval of a facility or site involves an initial evaluation of the plan in accordance with § 3.8 of this Part.
- K. Upon receipt of an application the Department shall review the application for completeness. If the application is incomplete, the Department shall list the information necessary to make the application complete and shall specify a date for submitting the necessary information. Where the Department has deemed an application to be deficient, the processing of the application will be suspended and the applicant given a deadline to correct said deficiencies to the satisfaction of the Department. If the applicant fails or refuses to correct said deficiencies within the time period specified or extension granted by the Department, the application shall be denied.
- L. After an application is determined to be complete, the Department may request additional information from an applicant but only when necessary to clarify, modify, or supplement previously submitted material. Requests for such additional information will not render an application incomplete, but if the applicant fails or refuses to submit such information, the application may be denied.
- M. During the review of an application, the Department shall determine whether a site visit(s) and inspection are necessary in order to evaluate the application completely and accurately. If the Department decides that a site visit is necessary for any reason in conjunction with the processing of an application, the applicant shall be notified and a site visit shall be scheduled.
- N. The department shall issue an Order of Approval when and if it determines that all applicable requirements of these rules and regulations have been met.
- O. An owner of a facility or site may apply to the Director for a transfer of the Order of Approval to a new owner. The current owner must apply to the Director in writing by certified mail of the proposed transfer at least ninety (90) days prior to the proposed transfer date and must include the following information:
  - 1. Name and address of the subject facility or site;
  - 2. Name and address of new owner(s) and operator(s);
  - 3. Names and addresses of the person(s) upon whom the Director may serve legal process;
  - 4. A notarized statement signed by a duly authorized officer or agent of the new owner stating that he or she has read the original Application for Order of Approval and believes that to the best of his or her knowledge there has been no material change in the operations of the facility or site

since the Order of Approval was issued or describes the changes that have occurred since the Order of Approval was issued; and,

5. A proposed transfer date on which the new owner will assume the Order of Approval and all accompanying responsibility.
- P. The Director may approve a change in the method of treatment, disposal, land application, or transportation of sludge from a publicly owned treatment works or privately owned treatment works for emergency situations without requiring the owner or operator of the facility to first apply for an Order of Approval. The owner or operator of the facility must submit to the Director an Application for Order of Approval within fourteen (14) days of receiving an emergency approval from the Director.
- Q. The owner or operator of an approved facility or site shall furnish to the Department within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, suspending, or revoking the facility or site's Order of Approval. The owner or operator of an approved facility or site shall also furnish to the Department upon request, copies of records required by the Order of Approval.
- R. The owner or operator of an approved facility or site shall retain records of all information required under the Order of Approval for a period of at least five (5) years from the date that record was generated. This period may be extended by request of the Department at any time.

### **3.8 Application for Order of Approval**

- A. This rule outlines the information that must be filed with the Department when applying for an Order of Approval to manage sludge. This rule does not apply to an applicant that proposes to only transport sludge (see § 3.14 of this Part). A registered professional engineer or land surveyor must stamp plans and submissions required below. The plans should be scaled to fit on a standard 24 x 36 inch sheet wherever possible. Larger sheets must be used when the minimum scale requirements do not permit the use of 24 x 36 inch sheets. The Director may require additional information if necessary to satisfy the requirements of these rules and regulations.
- B. Application Form. The applicant shall provide information on the proposed sludge management activity on an application form obtained from the department.
- C. Initial Investigation Plans. Copies of the latest U.S. Geological Topographic Map, Farm Services Agency aerial maps and the United States Department of Agriculture Soil Survey Map, with the facility or site outlined and an indication of the required setbacks shall be submitted to the Office of Water Resources prior to all other required information. This will allow initial evaluation of the plan relating to wetlands, aquifers, and soil type before large investigatory and



developmental expenditures are made. A report of the evaluation shall be made to the applicant. The report shall list what submissions, from §§ 3.8(D) through (I) of this Part below and from other rules in this part specific to the proposed management activity, must be submitted to the Office of Water Resources to obtain an Order of Approval.

D. Radius Plan. A radius plan including all the information listed below shall be submitted. The radius plan must be drawn at a minimum scale of one inch to two hundred feet (1"=200') and include all areas within a one quarter (1/4) mile radius from all property lines of the site. The required information includes:

1. All buildings;
2. All water supplies (wells, etc.);
3. All surface watercourses and wetlands;
4. All roads;
5. All boring locations (where applicable);
6. Legal boundaries of facility or site;
7. North arrow;
8. Extent of one hundred (100) year flood plain (where applicable), and,
9. Local zoning and permitting requirements.

D. Soil Borings. Borings are required for all proposed areas to be filled at a land disposal site or developed as an uncovered sludge treatment facility or site. Soil borings are not required for proposed land application sites. The minimum number of borings required is listed below:

<b>Proposed No. of Acres</b>	<b>No. of Borings</b>
1 – 10	3
11 - 50	6
51 - 100	12
101 - 200	18
Over 200	24 plus 1 for every 10 acres over 200

- E. Split spoon samples shall be collected at a minimum of five (5) foot intervals. A soil description shall be provided for each split spoon sample. All borings should be driven to a minimum depth of twenty (20) feet below the proposed bottom level of sludge or to refusal. The following information contained on the boring logs should be submitted:
1. Depth of the maximum elevation of the groundwater table (to be measured at a minimum of twenty four (24) hours after the boring is taken);
  2. A detailed soil profile description to a depth of four (4) feet must be submitted for each soil mapping unit on the site. The required information includes:
    - a. Color of each horizon;
    - b. Texture of each horizon;
    - c. Depth of each horizon;
    - d. Depth to mottles (if any);
    - e. Amount of coarse fragments (if any);
    - f. Depth to bedrock (if encountered);
    - g. Consistence or relative density, and,
    - h. Slope.
  3. Method of boring;
  4. Blow counts, and,
  5. Date boring was taken.
- F. The boring should be located to give the best indications of subsurface conditions for the whole site that can be obtained considering the limited number of borings required. The groundwater table elevation determination shall be made when the water table is highest; this occurs usually during the months of January through April. (Specific dates may be determined on a yearly basis by the Director.) All boring holes must be maintained for future water table elevation determinations. If the Director feels it necessary, additional borings may be required.
- G. Groundwater Survey. A groundwater survey showing the maximum ground water elevations, the direction of groundwater flow, and an estimation of the rate of flow (including calculations) shall be submitted.

- H. Site Delineation. The following areas at the proposed site shall be marked with stakes at the time of the engineering survey. The stakes must be a minimum of two (2) feet high, clearly visible and maintained at all times. All sites shall include the following delineations:
1. Areas enclosed by legal boundaries; and,
  2. Areas to be developed or filled as indicated in the Operation and Maintenance Plan.
- I. Management Plan. A Management Plan shall be submitted detailing operating procedures for the facility or site.

### **3.9 Land Disposal**

- A. This rule applies to the disposal of sludge by burial. All applications for land disposal sites are to be in accordance with the design and operational requirements for solid waste landfills as promulgated by the Office of Waste Management, Rhode Island Department of Environmental Management. (Sludge burial at a solid waste landfill is covered under § 3.16 of this Part). All land disposal sites must operate under an Order of Approval and must meet the following requirements.
- B. Condition of Sludge. Sludge that is land disposed must be treated by one or more of the Processes to Significantly Reduce Pathogens listed in § 3.28 of this Part. Such treatment is the responsibility of the owner or operator of the facility performing the Process to Significantly Reduce Pathogens. Sludge that meets the hazardous waste criteria shall not be land disposed.
- C. Groundwater. A minimum of five (5) feet of soil is required between the lowest level of deposited sludge and the seasonal high groundwater table as determined by a DEM-licensed Class IV soil evaluator in accordance with the procedures described in Part 6 of this Subchapter. The determination of the seasonal high groundwater table must be witnessed by the Department. In addition, a minimum of five (5) feet of soil is required between the highest level of bedrock and lowest level of deposited sludge. If the owner or applicant seeks a variance from the separation distances under § 3.22 of this Part, the Director may require the installation of an impermeable liner system and leachate collection and treatment system or other means to prevent leachate from reaching the groundwater as a condition for the granting of such variance.
- D. Surface Water. No sludge shall be land disposed within 200 feet of any body of surface water. No sludge shall be land disposed within one thousand two hundred (1200) feet from the center line of the following freshwater rivers: Ashaway River, Beaver River, Blackstone River, Chepachet River, Clear River, Falls River, Flat River, Hunt River, Moshassuck River, Moosup River, Narrow River, Pawcatuck River, Pascoag River, Pawtuxet River, and Wood River. No

sludge shall be land disposed of in the watershed of any surface water used as a public drinking water supply. The Director may, if necessary, require continuous monitoring of any surface watercourses in the vicinity of the proposed land disposal site. Such monitoring shall be of a type and frequency determined by the Director on a case by case basis and shall be the responsibility of the owner or operator.

- E. Drinking Water Wells. No sludge shall be land disposed within one thousand (1,000) feet of any private drinking water supply well or within the Wellhead Protection Area for a public drinking water supply well. Land disposal of sludge shall be in accordance with the "Rhode Island Groundwater Protection Act of 1985", R.I. Gen. Laws Chapter 46-13.1 and any rules and regulations promulgated thereunder.
- F. Distance to Buildings. No sludge shall be land disposed within six hundred (600) feet of any domestic, commercial or industrial structure not associated with the proposed land disposal site.
- G. Distance to Property Lines. No sludge shall be land disposed within two hundred (200) feet of a property line.
- H. Monitoring Wells. For the purpose of monitoring groundwater conditions, the owner or operator of a land disposal site shall install and maintain monitoring wells of a number and type approved by the Director and at locations chosen by the Director. The owner or operator of the site is responsible for analysis of groundwaters in accordance with instructions of the Director. The Director shall determine the testing and reporting frequency.
- I. Erosion Control. The owner or operator shall make provisions to have the land disposal site, including the fill surface, graded and provided with a drainage system to minimize surface water runoff onto and into the fill, to drain off rain water falling on the fill and to prevent the collection of standing water.
- J. Transportation. All transportation of sludge shall comply with § 3.14 of this Part.
- K. Cover Material. A soil cover of at least six (6) inches shall be applied to all sludge deposits daily to control disease vectors and nuisance conditions. Final cover in terminating the use of a land disposal site shall be two (2) feet in depth.
- L. Odor Control. Any land disposal site must comply with Part 120-05-17 of this Title, or other rules and regulations pertaining to odors.
- M. Analysis of Sludge. All sludge intended for land disposal may be required to be tested using the Toxicity Characteristic Leaching Procedure for the parameters listed in § 3.31 of this Part and the results submitted to the Office of Water Resources. The owner or operator of the facility is responsible for all analyses. The Director shall determine the testing and reporting frequency depending upon the amount of sludge produced.

N. Submissions for Approval. The following submissions are required as part of an Application for Order of Approval for land disposal of sludge and must be stamped by a registered professional engineer or land surveyor. These submissions are in addition to the submission requirements listed in § 3.8 of this Part.

1. Site Plan. A site plan shall be submitted for all areas within the land disposal site. The site plan must be drawn to a minimum scale of one inch to one hundred feet (1"=100'). The site plan must include the following information:

- a. Initial ground contours at five foot intervals;
- b. Final proposed contours at five foot intervals;
- c. Boring locations;
- d. Proposed leachate collection and treatment systems;
- e. Proposed gas controls (if any);
- f. Buildings (if any);
- g. Wells (if any);
- h. Surface water courses (if any);
- i. Roads (if any);
- j. Cross section lines (see § 3.9(N)(2) of this Part);
- k. Groundwater monitoring wells;
- l. Legal boundaries of site;
- m. Power lines, pipe lines, rights of way and other utilities;
- n. Proposed fences;
- o. Weighing facilities (if any);
- p. North arrow;
- q. Location of borrow areas (if any), and,
- r. Boundaries of areas to be filled.

2. Cross Section. Typical cross section plans of the land disposal site shall be submitted. A minimum of two cross sections are required of right

angled center lines passing through the approximate middle of the land disposal site. The cross section plans should be drawn using a minimum horizontal scale of one inch to one hundred feet (1"=100'). All required details should be drawn using equal vertical and horizontal scales. The cross section plans must include the following information:

- a. Proposed lifts;
  - b. Virgin ground;
  - c. Maximum groundwater table;
  - d. Bedrock location;
  - e. Side slopes;
  - f. Details of surface drains and ditches;
  - g. Final fill elevation and grades;
  - h. Limits of excavations;
  - i. Final cover elevations;
  - j. Details on access road construction;
  - k. Details of leachate collection and treatment systems;
  - l. Details of gas venting facilities (if any), and,
  - m. Details of groundwater monitoring wells with soil profiles.
3. Management Plan. The Management Plan shall include the following information:
- a. Type of method to be used (trench, area, etc.);
  - b. Provisions for appropriate liners;
  - c. Proposed sequence of operation;
  - d. Estimate of amount of cover material available or to be purchased and from whom;
  - e. Operating hours;
  - f. Personnel and duties;
  - g. Projected use of completed land disposal site;

- h. Dust control program;
  - i. Vector control program;
  - j. Odor control program;
  - k. Procedures to control erosion and sedimentation and to promote vegetative growth in completed areas;
  - l. Equipment to be on site during operating hours;
  - m. Substitute equipment available;
  - n. Communications equipment available;
  - o. Population and service area;
  - p. Winter operations;
  - q. Provisions for limiting access such as fencing, signs, etc.;
  - r. Weighing facilities (if any);
  - s. Estimated life of land disposal site;
  - t. Aesthetic considerations;
  - u. Leachate treatment operations, and,
  - v. Surface drainage control methods.
4. Closure Plan. A closure plan for all areas within the land disposal site shall be submitted. The closure plan must be drawn to a minimum scale of one inch to one hundred feet (1" = 100'). The closure plan must include the following information:
- a. Date of proposed closure;
  - b. Methods of restricting access and preventing additional disposal;
  - c. Methods of protecting ground and surface water and controlling air emissions;
  - d. Date on which all land disposal areas will be covered with two (2) feet of final cover;
  - e. Date of installation of impermeable covering, if any, and planting with vegetation;

- f. Final grades and method of maintaining final grades and promoting surface runoff;
  - g. Fences and gates;
  - h. Location and description of groundwater and surface water monitoring stations and provision that such monitoring shall continue on a quarterly basis for up to five (5) years after the site is closed, and
  - i. Legal boundaries.
5. In addition, the applicant shall set aside a post-closure monitoring fund for a monitoring period of up to thirty (30) years subsequent to the closure of the land disposal site. The applicant shall establish a post-closure monitoring and maintenance fund designated "in trust for the post-closure monitoring and maintenance of the land disposal site." A bank or other financial institution approved by the Director shall act as trustee of the trust fund. The trust instrument shall provide that the Director shall have the right to use such part of the fund as is necessary to carry out the post-closure monitoring and maintenance for the land disposal site in accordance with these rules and regulations. The trust instrument shall also provide that the Director shall determine whether post-closure expenditures are reasonable and in accordance with the closure plan. The trustee shall release these funds upon receipt of a written request from the Director.
6. Analysis of Sludge. All results of the sludge analysis required in § 3.9(M) of this Part shall be submitted.

### **3.10 Land Application**

- A. This rule applies to the land application of sludge that has been treated by one or more of the Processes to Significantly Reduce Pathogens listed in § 3.28 of this Part. (This rule does not apply to land application of Class A Biosolids or any sludge that has been treated by one of the Processes to Further Reduce Pathogens.) All land application sites must operate under an Order of Approval and must meet the following requirements:
- B. Sludge and Soil Analysis. All sludge intended for land application may be required to be tested using the Toxicity Characteristic Leaching Procedure for the parameters listed in § 3.31 of this Part and the results submitted to the Office of Water Resources. Sludge intended for land application must meet the limits established in § 3.33 of this Part for metals and must be tested for the listed characteristics. In addition, soil from the proposed land application site, with the exception of silvicultural lands, must be tested for metals listed in § 3.33 of this Part and for the parameters listed in § 3.10(T)(3) of this Part below. The Director



shall determine the testing and reporting frequency. All sludge analyses shall be the responsibility of the owner or operator of the facility; all soil analyses shall be the responsibility of the applicant.

- C. Land Application Rates. All sludge intended for land application must be applied at an annual rate not to exceed the amount necessary to supply adequate available nitrogen for crop production using good agricultural or silvicultural practices or not to exceed the maximum annual rates recommended by the U.S. Department of Agriculture to achieve fertilizer benefits and soil improvement.
- D. Cumulative Loading Rates. The maximum amount of sludge that can be applied to a land application site shall be calculated using the procedure established in § 3.34 of this Part. The amount of metals in the soil shall be deducted from each calculation.
- E. Condition of Sludge. Sludge intended for land application shall be treated by one of the Processes to Significantly Reduce Pathogens listed in § 3.28 of this Part and shall meet one of the Vector Attraction Reduction Requirements listed in § 3.30 of this Part. Such treatment shall be the responsibility of the owner or operator of the facility. Sludge intended for land application shall not meet the criteria for hazardous waste.
- F. Crops. Food crops with harvested parts that touch the sewage sludge/soil mixture and are totally above the land surface shall not be harvested for fourteen (14) months after application of sewage sludge. Food crops with harvested parts below the surface of the land shall not be harvested for twenty (20) months after application of sewage sludge when the sewage sludge remains on the land surface for four (4) months or longer prior to incorporation into the soil. Food chain crops with harvested parts below the surface of the land shall not be harvested for thirty eight (38) months after application of sewage sludge when the sewage sludge remains on the land surface for less than four (4) months prior to incorporation into the soil. Food crops with harvested parts that do not touch the sewage sludge/soil mixture, feed crops and fiber crops shall not be harvested for thirty (30) days after application of sewage sludge.
- G. Turf. Turf grown on land where sewage sludge is applied shall not be harvested for one (1) year after the last application of sewage sludge has occurred when the harvested turf is placed on either land with a high potential for public exposure or a lawn.
- H. Public Access. Public access to the land application site shall be prohibited by the owner or operator until one (1) year has passed since the last application of sewage sludge to land with a high potential for public exposure, such as a park or ball field or thirty (30) days has passed since the last application of sewage sludge to land with a low potential for public exposure, such as private farmland.

- I. Animal Grazing. Animals whose products are consumed by humans shall not be allowed to graze on land where sewage sludge is applied for thirty (30) days after the last application of sewage sludge has occurred.
- J. Frozen Ground. No sludge shall be applied to frozen, flooded or snow-covered ground unless appropriate erosion and runoff control measures are provided.
- K. Odor Control. Any land application project must comply with Part 120-05-17 of this Title, as amended, or other rules and regulations pertaining to odors.
- L. Groundwater. A minimum of two (2) feet of soil is required between the lowest level of applied sludge and the seasonal high groundwater table as determined by a DEM-licensed Class IV soil evaluator in accordance with the procedures described in Part 6 of this Subchapter. The determination of the seasonal high groundwater table must be witnessed by the Department. In addition, a minimum of three (3) feet of soil is required between the highest level of bedrock and the lowest level of applied sludge.
- M. Surface Water. No sludge shall be land applied within two hundred (200) feet of any body of surface water. No sludge shall be applied to land within the watershed of any surface water used as a public drinking water supply. The Director may, if necessary, require continuous monitoring of any surface watercourses in the vicinity of the proposed land application site. Such monitoring shall be of a type and frequency determined by the Director on a case by case basis and shall be the responsibility of the owner or operator.
- N. Drinking Water Wells. No sludge shall be land applied within one thousand (1,000) feet of any private drinking water supply well or within the Wellhead Protection Area for a public drinking water supply well. Land application of sludge shall be in accordance with the Rhode Island Groundwater Protection Act of 1985, R.I. Gen. Laws Chapter 46-13.1 and any rules and regulations promulgated thereunder.
- O. Distance to Buildings. No sludge shall be land applied within four hundred (400) feet of any domestic, commercial or industrial structure not associated with the proposed land application project.
- P. Distance from Property Lines. No sludge shall be land applied within one hundred (100) feet of a property line. This requirement will be met if consent from the adjacent landowner is received.
- Q. Monitoring Wells. Groundwater monitoring shall be of a type and frequency determined by the Director on a case by case basis and shall be the responsibility of the owner or operator.
- R. Erosion Control. Soil erosion on all land application sites shall be limited to conditions which meet Resource Management System Quality Criteria for soil erosion as defined in the USDA Natural Resources Conservation Service

(NRCS) Field Office Technical Guide for Rhode Island. Erosion control methods on all land application sites shall be consistent with practice standards and specifications in the NRCS Field Office Technical Guide for Rhode Island. Sediment and runoff shall be controlled on all land application sites consistent with the measures within the Rhode Island Soil Erosion and Sediment Control Handbook, RI Department of Environmental Management, USDA Soil Conservation Service and Rhode Island State Conservation Committee, 1989.

- S. Transportation. All transportation of sludge shall comply with § 3.14 of this Part.
- T. Submissions for Approval. The following submissions are required as part of an Application for Order of Approval for land application of sludge and must be stamped by a registered professional engineer or land surveyor. These submissions are in addition to the submission requirements listed in § 3.8 of this Part.
  - 1. Site Plan. A site plan for all areas within the land application site shall be submitted. The site plan must be drawn to a minimum scale of one inch to one hundred feet (1"=100'). The site plan must include the following information:
    - a. Detailed soil map;
    - b. Buildings (if any);
    - c. Wells (if any);
    - d. Surface watercourses (if any);
    - e. Roads (if any);
    - f. Groundwater monitoring wells;
    - g. Proposed erosion control and runoff collection and treatment systems (if any);
    - h. Legal boundaries of site;
    - i. Power lines, pipe lines, rights of way and other utilities, and,
    - j. North arrow.
  - 2. Soil Description. A detailed soil profile description to a depth of four (4) feet must be submitted for each soil-mapping unit on the land application site. The required information includes:
    - a. Color of each horizon;
    - b. Texture of each horizon;

- c. Depth of each horizon;
  - d. Depth to mottles (if any);
  - e. Amount of coarse fragments (if any);
  - f. Depth to bedrock (if encountered);
  - g. Consistence or relative density, and,
  - h. Slope.
3. Laboratory Data. Representative samples shall be taken from the plow layer within the proposed land application site. The following data shall be submitted for each sample:
- a. Soil density;
  - b. Depth of sample, and,
  - c. Moisture content (%).
4. Management Plan. The Management Plan shall include the following information:
- a. Type of land application method to be used;
  - b. Detailed description of the land application project and the proposed sequence of operation;
  - c. Provisions for compliance with § 3.10(B) through (S) of this Part;
  - d. Personnel and duties;
  - e. Projected use of the land application site;
  - f. Procedures to control dust, vectors and odor;
  - g. Procedures to control erosion, sedimentation and promote vegetative growth;
  - h. Equipment to be utilized and substitute equipment to be on site;
  - i. Provisions to control access;
  - j. Estimated life of land application site, and,
  - k. Aesthetic considerations.

5. Sludge and Soil Analysis. The results of the sludge and soil analysis required in § 3.10(B) of this Part shall be submitted.

### **3.11 Treatment of Sludge**

- A. This rule applies to the treatment of sludge by one of the Processes to Further Reduce Pathogens listed in § 3.29 of this Part. All sludge treatment facilities must operate under an Order of Approval and must meet the following requirements:
- B. Sludge Treatment Method. All methods of sludge treatment must meet one of the Processes to Further Reduce Pathogens listed in § 3.29 of this Part and must meet one of the Vector Attraction Reduction Requirements listed in § 3.30 of this Part.
- C. Sludge Composting Methods. When sludge is treated by composting as provided in § 3.29(A) of this Part, one of the following composting methods shall be used:
  1. Aerated Static Pile. Sludge must be maintained at operating conditions of 55°C or greater for three (3) consecutive days. The sludge must remain in the active phase for a minimum of twenty one (21) days in a pile not to exceed twelve (12) feet in height. At the end of the active phase, the material must be cured for a minimum of thirty (30) days in a stockpile not to exceed twelve (12) feet in height unless the Department determines that such curing is not necessary. Such composting operations shall be provided with an appropriate leachate collection system, shall be built on an impervious surface and shall be protected from direct rainfall by a roof to reduce the amount of leachate and runoff.
  2. Windrow. Sludge must be maintained at operating conditions of 55°C or greater for at least fifteen (15) consecutive days during the active phase. The sludge must remain in the active phase for a minimum of twenty one (21) days in a pile, with the sludge being turned at least once every three (3) days. Height of the pile shall be compatible with the equipment used for turning the sludge. The active phase shall be followed by a curing period of at least thirty (30) days in a curing pile not to exceed twelve (12) feet in height unless the Department determines that such curing is not necessary. Such composting operations shall be provided with an appropriate leachate collection system, shall be built on an impervious surface and shall be protected from direct rainfall by a roof to reduce the amount of leachate and runoff.
  3. In-Vessel. Sludge must be maintained at operating conditions of 55°C or greater for three (3) consecutive days. The sludge must remain in the active phase for a minimum of fourteen (14) days. The active and curing phases are to be maintained for a total minimum period of thirty (30) days. If sludge is cured in a curing pile, the pile is not to exceed twelve (12) feet in height.

- D. Groundwater. A minimum of two (2) feet of soil is required between the proposed sludge treatment surface and the seasonal high groundwater table as determined by a DEM-licensed Class IV soil evaluator in accordance with the procedures described in Part 6 of this Subchapter. The determination of the seasonal high groundwater table must be witnessed by the Department. In addition, a minimum of three (3) feet of soil is required between the highest level of bedrock and the sludge treatment surface. If the applicant seeks a variance from these separation distances under § 3.22 of this Part, the applicant must demonstrate to the satisfaction of the Office of Water Resources that the sludge treatment facility or site will not generate leachate. Otherwise, the Director will require the installation of an impermeable liner system and leachate collection and treatment system or other means to prevent leachate from reaching the groundwater as a condition for the granting of such variance.
- E. Surface Water. No sludge shall be treated within two hundred (200) feet of any body of surface water. No sludge shall be treated within the watershed of any surface water used as a public drinking water supply. The Director may, if necessary, require continuous monitoring of any surface watercourses in the vicinity of the sludge treatment facility or site. Such monitoring shall be of a type and frequency determined by the Director on a case by case basis and shall be the responsibility of the owner or operator of the facility or site. If the applicant seeks a variance from these separation distances under § 3.22 of this Part, the applicant must demonstrate to the satisfaction of the Department that any runoff from the sludge treatment facility or site will not impact surface water as a condition for the granting of such variance.
- F. Drinking Water Wells. No sludge shall be treated within one thousand (1,000) feet of any private drinking water supply well or within the Wellhead Protection Area for a public drinking water supply well. Any sludge treatment facility or site shall comply with the Rhode Island Groundwater Protection Act of 1985, R.I. Gen. Laws Chapter 46-13.1 and any rules and regulations promulgated thereunder. If the applicant seeks a variance from these separation distances under § 3.22 of this Part, the applicant must demonstrate to the satisfaction of the Department that the sludge treatment facility or site will not generate leachate as a condition for the granting of such variance.
- G. Distance to Property Lines. No sludge shall be composted within four hundred (400) feet of a property line. If the applicant seeks a variance from this separation distance under § 3.22 of this Part, the Director will require that the facility be completely enclosed as a condition for the granting of such variance.
- H. Monitoring Wells. For the purpose of monitoring groundwater conditions, the owner or operator of a sludge treatment site shall install and maintain monitoring wells of a number and type approved by the Director and at locations chosen by the Director. The owner or operator of the site is responsible for analysis of groundwater in accordance with instructions of the Director. The Director shall determine the testing and reporting frequency. If the applicant seeks a variance

from this requirement, the applicant must demonstrate to the satisfaction of the Department that the sludge treatment operation will not generate leachate.

- I. Transportation. All transportation of sludge shall comply with § 3.14 of this Part.
- J. Stockpiling. All stockpiling of sludge and treated sludge shall comply with § 3.13 of this Part.
- K. Sludge and Bulking Agent Analysis. All sludge intended for treatment may be required to be tested using the Toxicity Characteristic Leaching Procedure for the parameters listed in § 3.31 of this Part and the results submitted to the Office of Water Resources. The Director shall determine the testing and reporting frequency. For composting facilities, any bulking agents utilized in the operation may also be required to be tested. Sludge analyses shall be the responsibility of the owner or operator of the facility that generates the sludge; bulking agent analyses shall be the responsibility of the owner or operator of the sludge composting facility.
- L. Condition of Sludge and Bulking Agents. All sludge intended for treatment and all bulking agents shall not meet the criteria for hazardous waste.
- M. Odors. Any sludge treatment facility must comply with Part 120-05-17 of this Title, and any other rules and regulations pertaining to odors.
- N. Treated Sludge Quality. Any treated sludge that meets all the limits established in § 3.32 of this Part shall be considered Class A Biosolids; the requirements and restrictions for the distribution and use of Class A Biosolids are listed in § 3.12(B) and (C) of this Part. Any treated sludge that does not meet the metals limits established in § 3.32 of this Part but meets the metals limits established in § 3.33 of this Part shall be considered Class B Biosolids; the requirements and restrictions for the use of Class B Biosolids are listed in § 3.12(D) of this Part. Any treated sludge that does not meet the metals limits established in § 3.33 of this Part shall be considered Class C Biosolids; the requirements and restrictions for the use and disposal of Class C Biosolids are listed in § 3.12(E) of this Part.
- O. Treated Sludge Analysis. Class A Biosolids must be tested for the metals and the pathogens listed in § 3.32 of this Part. Class B Biosolids and Class C Biosolids must be tested for the metals and the characteristics listed in § 3.33 of this Part. All results must be submitted to the Office of Water Resources. The Director shall determine the testing and reporting frequency. All treated sludge analysis shall be the responsibility of the owner or operator of the sludge treatment facility.
- P. Submissions for Approval. The following submissions are required as part of an Application for Order of Approval for a sludge treatment facility or site and must be stamped by a registered professional engineer or land surveyor. These submissions are in addition to the submission requirements listed in § 3.8 of this Part.

1. Site Plan. A site plan including all of the information listed below for all areas within the sludge treatment site shall be submitted. The site plan must be drawn to a minimum scale of one inch to one hundred feet (1"=100'). The required information includes:
  - a. Initial ground contours at five foot intervals;
  - b. Final proposed contours at five foot intervals;
  - c. Boring locations;
  - d. Proposed leachate collection and treatment systems;
  - e. Proposed gas controls (if any);
  - f. Buildings (where applicable);
  - g. Wells (if any);
  - h. Surface watercourses and other wetlands;
  - i. Roads;
  - j. Groundwater monitoring wells;
  - k. Legal boundaries of site;
  - l. Power lines, pipelines, rights of way and other utilities;
  - m. Proposed fences;
  - n. Weighing facilities (if any), and,
  - o. North arrow.
2. Management Plan. The Management Plan shall include the following information:
  - a. Detailed description of the sludge treatment method to be used and the proposed sequence of operation;
  - b. Use of bulking agent and procedures for temperature control (if any);
  - c. Operating hours;
  - d. Personnel and duties;
  - e. Procedures to control dust, vectors and odors;



- f. Provisions for the immediate treatment of all sludge;
  - g. Provisions for the proper storage of treated sludge;
  - h. Procedures to control erosion and sedimentation;
  - i. Equipment to be on site during operating hours;
  - j. Substitute equipment available;
  - k. Communications equipment available;
  - l. Population and service area;
  - m. Winter operations;
  - n. Provisions for limiting access;
  - o. Provisions for land application and/or disposal of treated sludge;
  - p. Weighing facilities (if any);
  - q. Estimated life of the sludge treatment facility;
  - r. Aesthetic considerations;
  - s. Leachate treatment operations, and,
  - t. Surface drainage control measures.
3. Sludge and Bulking Agent Analysis. The results of the sludge and bulking agent analysis required in § 3.11(K) of this Part shall be submitted.

### **3.12 Distribution and Land Application of Treated Sludge**

- A. This rule applies to the distribution and land application of treated sludge.
- B. Distribution of Class A Biosolids. This subrule applies to the distribution of Class A Biosolids. Except as provided in § 3.7(C)(4) of this Part, all distribution facilities or sites must operate under an Order of Approval and must meet the following requirements.
  - 1. Packaged Distribution of Class A Biosolids. Packaged distribution shall mean Class A Biosolids that are sold or given away in a bag or other container for application to the land. The container shall hold no more than one hundred (100) pounds of Class A Biosolids. The distributor shall provide the following information to the user on a label when Class A Biosolids are packaged:

- a. The name and address of the generator of the product;
  - b. A statement that the product is derived from sewage sludge;
  - c. Instructions on the proper use of the product for various applications (for example, on lawns). This must include a statement that the annual product application rate should not be exceeded, if applicable; and,
  - d. Class A Biosolids that are lead safe and are intended for use as mulch must include a statement that the product is lead safe but not lead free.
2. Bulk Distribution of Class A Biosolids. Bulk distribution shall mean Class A Biosolids that are sold or given away in bulk or in a container holding more than one hundred (100) pounds of Class A Biosolids. The requirements for the distribution of bulk Class A Biosolids vary based on volume as follows:
- a. Less Than Twenty-Five (25) Cubic Yards. Any distributor of Class A Biosolids shall provide the information from §§ 3.12(B)(1)(a) through (d) of this Part, in writing, to all users taking less than twenty-five (25) cubic yards per day. In addition, the distributor shall inform the user, in writing, that the Class A Biosolids shall not be further processed, stockpiled or distributed without prior approval from the Department unless the conditions of § 3.7(C)(4) of this Part are met.
  - b. More Than Twenty-Five (25) Cubic Yards. Any distributor of Class A Biosolids must provide a User's Guide to all users taking more than twenty-five (25) cubic yards per day. The User's Guide shall be provided to the distributor by the Department and shall include instructions on the proper use of the product for various applications. The distributor must provide the instructions for the product to the Department so that they can be incorporated into the User's Guide.
  - c. Record Keeping. Any distributor that distributes Class A Biosolids in bulk must maintain written records of the following information when a user or another distributor is provided with more than twenty-five (25) cubic yards per day:
    - (1) date the Class A Biosolids was taken;
    - (2) name of user;
    - (3) amount of Class A Biosolids taken;
    - (4) location where Class A Biosolids are to be applied; and

- (5) signature of the operator.
  - (6) Said records must be available for inspection by state and federal officials.
- 3. Stockpiling. The stockpiling of Class A Biosolids shall comply with § 3.13 of this Part.
- 4. Odor Control. Any distribution site must comply with Part 120-05-17 of this Title, or other rules and regulations pertaining to odors.
- 5. Transportation. All transportation of sludge shall comply with § 3.14 of this Part.
- 6. Licensing. Any facility or site that distributes packaged or bulk Class A Biosolids must comply with the Department's Office of Natural Resource Services' Commercial Fertilizer Law, (R.I. Gen. Laws Chapter 2-7) and any other rules and regulations pertaining to fertilizer and soil amendment products. All fertilizer and soil amendment products must be registered with the Office of Natural Resource Services before being offered for sale.
- 7. Submissions for Approval. The following submissions are required as part of an Application for Order of Approval for a treated sludge distribution facility or site and must be stamped by a registered professional engineer or land surveyor. These submissions are in addition to the submission requirements listed in § 3.8 of this Part.
  - a. Site Plan. A site plan including all of the information listed below for all areas within the treated sludge distribution site shall be submitted. The site plan must be drawn to a minimum scale of one inch to one hundred feet (1"=100'). The required information includes:
    - (1) Initial ground contours at five foot intervals;
    - (2) Final proposed contours at five foot intervals;
    - (3) Boring locations;
    - (4) Proposed leachate collection and treatment systems;
    - (5) Buildings (where applicable);
    - (6) Treated sludge stockpile areas;
    - (7) Wells (if any);
    - (8) Surface watercourses and other wetlands;

- (9) Roads;
- (10) Groundwater monitoring wells;
- (11) Legal boundaries of site;
- (12) Power lines, pipelines, rights of way and other utilities;
- (13) Proposed fences;
- (14) Weighing facilities (if any), and,
- (15) North arrow.

- b. Management Plan. The applicant shall submit a Management Plan describing compliance with the provisions of §§ 3.12(B)(1) through (6) of this Part.
- c. Stockpiling. The applicant shall submit a copy of the latest U.S. Geological Topographic Map with the distribution site outlined and an indication of the Class A Biosolids stockpile areas. This requirement shall be waived if the applicant proposes to stockpile Class A Biosolids in an enclosed structure, where runoff will not occur.
- d. Treated Sludge Analysis. The applicant shall submit the results of the analysis required in § 3.11(O) of this Part.

C. Land Application of Class A Biosolids. This subrule applies to the land application of Class A Biosolids obtained from a generator that possesses a valid Order of Approval from the Department to generate and distribute Class A Biosolids. Except as provided in § 3.7(C)(3) of this Part and except in the case of pilot projects as provided in § 3.7(E) of this Part, all sites where Class A Biosolids is land applied must operate under an Order of Approval and must meet the following requirements. The land application of Class A Biosolids obtained from a generator that does not hold a valid Order of Approval from the Department is prohibited.

- 1. Stockpiling. The stockpiling of Class A Biosolids shall comply with § 3.13 of this Part. The quantity of Class A Biosolids stockpiled at the land application site shall be consistent with the appropriate application rate and size of the land application area.
- 2. Frozen Ground. No Class A Biosolids shall be applied to frozen, flooded or snow-covered ground unless appropriate erosion and runoff control measures are provided.

3. Erosion Control. Soil erosion on all land application sites shall be limited to conditions which meet Resource Management System Quality Criteria for soil erosion as defined in the USDA Natural Resources Conservation Service (NRCS) Field Office Technical Guide for Rhode Island. Erosion control methods on all land application sites shall be consistent with practice standards and specifications in the NRCS Field Office Technical Guide for Rhode Island. Sediment and runoff shall be controlled on all land application sites consistent with the measures within the Rhode Island Soil Erosion and Sediment Control Handbook, RI Department of Environmental Management, USDA Soil Conservation Service and Rhode Island State Conservation Committee, 1989.
4. Odor Control. Any distribution site must comply with Part 120-05-17 of this Title, or other rules and regulations pertaining to odors.
5. Transportation. All transportation of sludge shall comply with § 3.14 of this Part.
6. Submissions for Approval. The following submissions are required as part of an Application for Order of Approval for the land application of Class A Biosolids.
  - a. Management Plan. The applicant shall submit a Management Plan describing compliance with the provisions of §§ 3.12(C)(1) through (5) of this Part.
  - b. Class A Biosolids Generator. The applicant shall identify the generator of the Class A Biosolids to be land-applied.

D. Land Application of Class B Biosolids:

1. Land Application of Class B Biosolids for Agricultural Use. This subrule applies to the land application of Class B Biosolids as a fertilizer and/or soil amendment to enhance Agricultural Lands. All Class B Biosolids land application projects must operate under an Order of Approval, must meet the same requirements for land-applied sludge in §§ 3.10(F) through (L) and 3.10(Q) through (R) of this Part, and must meet the following additional requirements:
  - a. Soil Analysis. Soil from the proposed land application site must be tested for metals listed in § 3.33 of this Part and for the parameters listed in § 3.10(T)(3) of this Part. The Director shall determine the testing and reporting frequency. All soil analyses shall be the responsibility of the applicant.
  - b. Land Application Rates. All Class B Biosolids intended for agricultural use must be land applied at an annual rate not to exceed the amount necessary to supply adequate available

nitrogen for crop production using good agricultural practices or not to exceed the maximum annual rates recommended by the U.S. Department of Agriculture to achieve fertilizer benefits and soil improvement.

- c. Cumulative Loading Rates. The maximum amount of Class B Biosolids that can be applied to a land application site shall be calculated using the procedure established in § 3.34 of this Part. The amount of metals in the soil shall be deducted from each calculation.
  - d. Surface Water. No Class B Biosolids shall be land applied within fifty (50) feet of any body of surface water or within one hundred (100) feet of any body of surface water within the watershed of a public drinking water supply. The Director, may, if necessary, require continuous monitoring of any surface watercourses in the vicinity of the proposed Class B Biosolids application Site. Such monitoring shall be of a type and frequency determined by the Director on a case by case basis and shall be the responsibility of the owner or operator. This requirement will be met if the applicant demonstrates to the satisfaction of the Department that any runoff from the proposed project will not affect surface water.
  - e. Drinking Water Wells. No Class B Biosolids shall be land applied within fifty (50) feet of any private drinking water supply well or within four hundred (400) feet of any public drinking water supply well. Land application of Class B Biosolids shall be in accordance with the Rhode Island Groundwater Protection Act of 1985, R.I. Gen. Laws Chapter 46-13.1 and any rules and regulations promulgated thereunder.
  - f. Distance to Property Lines. No Class B Biosolids shall be land applied within fifty (50) feet of a property line. This requirement will be waived if consent from the adjacent landowner is received.
  - g. Stockpiling. All stockpiling of Class B Biosolids shall comply with § 3.13 of this Part.
  - h. Transportation. All transportation of Class B Biosolids shall comply with § 3.14 of this Part.
2. Land Application of Class B Biosolids for Non-Agricultural Use. This subrule applies to land application of Class B Biosolids as a fertilizer and/or soil amendment to enhance non-Agricultural Lands. Such uses may include, but are not limited to public parks and grounds, sand and gravel pit reclamation, roadsides and medians, silviculture, playgrounds, golf courses, ball fields and stadiums and cemeteries. All Class B

Biosolids land application projects must operate under an Order of Approval, must meet the same requirements for land-applied sludge in §§ 3.10(J) through (L) and §§ 3.10(Q) through (R) of this Part, and must meet the following requirements:

- a. Cumulative Loading Rates. The maximum amount of Class B Biosolids that can be applied to a land application site shall be calculated using the procedure established in § 3.34 of this Part. All Class B Biosolids intended for land application must be applied using good agricultural or silvicultural practices.
- b. Public Access. Public access to land where Class B Biosolids is applied shall be prohibited by the Owner or Operator until one (1) year has passed since the last application of Class B Biosolids to land with a high potential for public exposure, such as a park or ball field or thirty (30) days has passed since the last application of Class B Biosolids to land with a low potential for public exposure, such as a sand and gravel pit reclamation Site. This requirement will be waived if a land application site receives Class B Biosolids which meets the pathogen limits established in § 3.32 of this Part.
- c. Surface Water. No Class B Biosolids shall be land applied within fifty (50) feet of any body of surface water or within one hundred (100) feet of any body of surface water within the watershed of a public drinking water supply. The Director, may, if necessary, require continuous monitoring of any surface watercourses in the vicinity of the proposed Class B Biosolids application site. Such monitoring shall be of a type and frequency determined by the Director on a case by case basis and shall be the responsibility of the owner. This requirement will be met if the applicant demonstrates to the satisfaction of the Department that the proposed project will not affect surface water.
- d. Drinking Water Wells. No Class B Biosolids shall be land applied within fifty (50) feet of any private drinking water supply well or within four hundred (400) feet of any public drinking water supply well. Land application of Class B Biosolids shall be in accordance with the Rhode Island Groundwater Protection Act of 1985, R.I. Gen. Laws Chapter 46-13.1 and any rules and regulations promulgated thereunder.
- e. Distance to Property Lines. No Class B Biosolids shall be land applied within fifty (50) feet of a property line. This requirement will be waived if written consent is received from the adjacent land owner.

- f. Stockpiling. All stockpiling of Class B Biosolids shall comply with § 3.13 of this Part.
    - g. Transportation. All transportation of Class B Biosolids shall comply with § 3.14 of this Part.
  - 3. Submissions for Approval. The following submissions are required as part of an Application for Order of Approval for the agricultural or non-agricultural use of Class B Biosolids and must be stamped by a registered professional engineer or land surveyor. These submissions are in addition to the submission requirements listed in § 3.8 of this Part.
    - a. Management Plan. The applicant shall submit a Management Plan that includes the following information:
      - (1) Detailed description of the Class B Biosolids land application project and the proposed sequence of operation;
      - (2) Provisions for compliance with §§ 3.12(C)(1) or 3.12(C)(2) of this Part;
      - (3) Personnel and duties;
      - (4) Procedures to control dust;
      - (5) Procedures to control erosion, sedimentation and promote vegetative growth;
      - (6) Equipment to be utilized;
      - (7) Substitute equipment available;
      - (8) Provisions to control access;
      - (9) Estimated life of Class B Biosolids land application area, and
      - (10) Aesthetic considerations.
    - b. Class B Biosolids and Soil Analysis. The results of the Class B Biosolids analysis required in § 3.11(O) of this Part and the soil analysis required in § 3.12(D)(1)(a) of this Part must be on file with the Office of Water Resources at the time of application.
- E. Disposal of Class C Biosolids. Class C Biosolids may be used as cover material for solid waste landfills and land disposal sites under § 3.12(F) of this Part. Class C Biosolids may be disposed of by burial at land disposal sites and solid waste landfills under §§ 3.9 and 3.16 of this Part. Land application of Class C Biosolids is prohibited.



- F. Use of Treated Sludge as Landfill Cover. This subrule applies to the use of treated sludge as cover material at solid waste landfills and land disposal sites. Use at solid waste landfills must be in accordance with the Department's solid waste regulations. All solid waste landfills and land disposal sites using treated sludge as cover material must operate under an Order of Approval and must meet the following requirements.
1. Solid Waste Landfills. Solid waste landfill uses include the following:
    - a. Daily Cover. Treated sludge may be used as initial or daily landfill cover only as an amendment in amounts to be approved on a case-by-case basis.
    - b. Intermediate Cover. Treated sludge may be used as an amendment in the creation of a six-inch (6") intermediate cover over the initial cover layer.
    - c. Final Cover. Treated sludge may be used as final landfill cover as an application of soil of sufficient type and thickness to support vegetative growth.
  2. Land Disposal Sites. Treated sludge may be used as final cover for land disposal sites as an application of soil of sufficient type and thickness to support vegetative growth.
  3. Application Rates. Treated sludge used as cover shall be applied at a rate determined on a case-by-case basis. Use at solid waste landfills shall be in accordance with procedures established in the department's solid waste regulations.
  4. Surface Water. Treated sludge used as cover shall not be applied within fifty (50) feet of any body of surface water. This requirement will be met if the applicant demonstrates to the satisfaction of the Department that any runoff from the project will not affect surface water.
  5. Odor Control. Any solid waste landfill or land disposal site using treated sludge as cover must comply with Part 120-05-17 of this Title, or other rules and regulations pertaining to odors.
  6. Transportation. All transportation of treated sludge shall comply with § 3.14 of this Part.
  7. Submissions for Approval. The following submissions are required as part of an Application for Order of Approval for the use of treated sludge as cover material at solid waste landfills and land disposal sites and must be stamped by a registered professional engineer or land surveyor. These submissions are in addition to the submission requirements listed in § 3.8 of this Part. All submissions for approval and amendments to solid waste

landfill operating and/or closure plans for using treated sludge for landfill cover must also be approved by the Office of Waste Management, in accordance with the solid waste regulations.

- a. Management Plan. The applicant shall submit a Management Plan describing compliance with the provisions of §§ 3.12(F)(1) through (6) of this Part.
- b. Treated Sludge Analysis. The applicant shall submit the results of the analysis required in § 3.11(O) of this Part.

### **3.13 Stockpiling**

- A. This rule applies to the stockpiling of untreated and treated sludge at a sludge management facility or site. Except as provided in § 3.7(C)(4) of this Part, all stockpile facilities and sites must operate under an Order of Approval. Requirements for stockpiling sludge are as follows:
- B. Untreated Sludge. Other than in approved storage facilities at publicly or privately owned treatment works, the stockpiling of untreated sludge is prohibited. Arrangements must be made to either:
  - 1. Treat all sludge immediately upon arrival at a sludge treatment facility;
  - 2. Bury all sludge immediately upon arrival at a land disposal or co-disposal facility or site; and,
  - 3. Land apply all sludge immediately upon arrival at a land application site.
- C. Treated Sludge. The stockpiling of treated sludge shall meet the following requirements:
  - 1. Groundwater. A minimum of two (2) feet of soil is required between the lowest level of stockpiled sludge and the seasonal high groundwater table as determined by a DEM-licensed Class IV soil evaluator in accordance with the procedures described in Part 6 of this Subchapter. The determination of the seasonal high groundwater table must be witnessed by the Department. In addition, a minimum of three (3) feet of soil is required between the highest level of bedrock and the lowest level of stockpiled sludge. If the applicant seeks a variance from these separation distances under § 3.22 of this Part, the applicant must demonstrate to the satisfaction of the Office of Water Resources that the sludge treatment facility or site will not generate leachate. Otherwise, the Director will require the installation of an impermeable liner system or leachate collection and treatment system or other means to prevent leachate from reaching the groundwater as a condition for the granting of such variance.

2. **Surface Water.** No treated sludge shall be stockpiled within two hundred (200) feet of any body of surface water. No treated sludge shall be stockpiled within the watershed of any surface water used as a public drinking water supply. The Director may, if necessary, require continuous monitoring of any surface watercourses in the vicinity of the stockpile site. Such monitoring shall be of a type and frequency determined by the Director on a case by case basis and shall be the responsibility of the owner or operator of the facility or site. If the applicant seeks a variance from these separation distances under § 3.22 of this Part, the applicant must demonstrate to the satisfaction of the Department that any runoff from the sludge treatment facility or site will not impact surface water as a condition for the granting of such variance.
  3. **Drinking Water Wells.** No treated sludge shall be stockpiled within one thousand (1,000) feet of any private drinking water supply well or within the Wellhead Protection Area for a public drinking water supply well. Any stockpile site shall comply with the Rhode Island groundwater Protection Act of 1985, R.I. Gen. Laws Chapter 46-13.1 and any rules and regulations promulgated thereunder. If the applicant seeks a variance from these separation distances under § 3.22 of this Part, the applicant must demonstrate to the satisfaction of the Department that the stockpile site will not generate leachate. Otherwise, the Director will require the installation of an impermeable liner system or other means to prevent leachate from reaching the groundwater as a condition for the granting of such variance.
  4. **Distance to Property Lines.** No treated sludge shall be stockpiled within one hundred (100) feet of a property line. If the applicant seeks a variance from this separation distance under § 3.22 of this Part, the Director will require that the treated sludge be stockpiled in a facility that is enclosed as a condition for the granting of such variance.
  5. **Monitoring Wells.** For the purpose of monitoring groundwater conditions, the owner or operator of a stockpile facility or site shall install and maintain monitoring wells of a number and type approved by the Director and at locations chosen by the Director. The owner or operator of the site is responsible for analysis of groundwater in accordance with instructions of the Director. The Director shall determine the testing and reporting frequency. If the applicant seeks a variance from this requirement, the Director will require that the treated sludge be stockpiled in a facility that is completely enclosed as a condition for the granting of such variance.
  6. **Odor Control.** Any stockpile facility or site must comply with Part 120-05-17 of this Title, or other rules and regulations pertaining to odors.
- D. **Submissions for Approval.** The following submissions are required as part of an Application for Order of Approval for the stockpiling of treated sludge and must

be stamped by a registered professional engineer or land surveyor. These submissions are in addition to the submission requirements listed in § 3.8 of this Part.

1. Management Plan. The applicant shall submit a Management Plan describing compliance with the provisions of §§ 3.13(C)(1) through (6) of this Part.
2. Treated Sludge Analysis. The applicant shall submit the results of the analysis required in § 3.11(O) of this Part.

### **3.14 Transportation**

- A. This rule applies to the transportation of sludge on public roads. Except as provided in § 3.7(C)(1) of this Part, all transporters operating within or entering the State of Rhode Island for the purpose of treatment, disposal, stockpiling, and/or land application of sludge within the State of Rhode Island shall operate under an Order of Approval and shall meet the requirements in this rule. All other transporters entering the State of Rhode Island shall not be required to operate under an Order of Approval. However, such transporters shall meet the requirements in § 3.14(B) of this Part below.
- B. Vehicles and Containers. All vehicles and containers that are used for transportation of sludge shall comply with the following:
  1. Each container and vehicle shall be maintained so as not to create objectionable odors or public health or environmental hazards;
  2. All open containers shall be covered during transport to minimize odors and to prevent loss of sludge;
  3. Each container transporting sludge from which liquid might be released during transport shall be watertight;
  4. Vehicles and containers containing sludge shall not be placed for longer than 24 hours at a facility or site;
  5. All containers shall be inspected by the driver prior to transport on public roads to ensure that sludge will not leak or spill out during transportation; and,
  6. All vehicles and containers shall conform to all applicable state and federal requirements.
- C. Recordkeeping. With the exception of Class A Biosolids, a transporter shall keep a written record of the following information for each load of sludge:
  1. Date the sludge is removed from the generator's facility or site;

2. Generator's name, address and telephone number;
  3. Characteristics of sludge (i.e. liquid or solid);
  4. Quantity of sludge, in wet tons, dry tons and gallons (if in liquid form);
  5. Name, address and telephone number of the facility(ies) or site(s) to which the sludge is to be delivered; and,
  6. The date delivered to the facility or site.
- D. Reporting. With the exception of Class A Biosolids, the transporter shall submit monthly the information required in § 3.14(C) of this Part above to the Office of Water Resources by no later than the 15th day of the following month.
- E. Submissions for Approval. The following submissions are required as part of an Application for Order of Approval for transportation of sludge.
1. Application Form. The applicant shall provide information on the proposed sludge management activity on an application form obtained from the department.
  2. Management Plan. A Management Plan shall be submitted describing provisions for compliance with §§ 3.14(B) through (D) of this Part.

### **3.15 Incineration**

- A. Incineration of sludge shall be permitted if the incinerator system employed complies with rules and regulations promulgated by the Department and the USEPA regarding incinerators, air pollution, and all other applicable provisions of the law and such rules and regulations. All sludge incinerators shall operate under an Order of Approval.
- B. Incineration Methods. Sludge incineration may be practiced by, but not limited to, the methods described below. Any proposed sludge incineration method must consider the treatment of exhaust gases to exclude harmful organics and particulates as stated in EPA and Rhode Island Air Pollution Control Regulations. Any comparable method of sludge incineration shall be considered by the Director for approval.
1. Multiple Hearth Incineration which includes, but is not limited to, "excess air" and pyrolysis.
  2. Fluidized Bed Reactor which includes, but is not limited to, typical graded silica sand beds for the incineration of sludge.
- C. Sludge Analysis. All sludge intended for incineration may be required to be tested using the Toxicity Characteristic Leaching Procedure for the parameters listed in

§ 3.31 of this Part and the results submitted to the Office of Water Resources. The Director shall determine the testing and reporting frequency. All sludge analyses shall be the responsibility of the owner of the facility that generates the sludge.

- D. Condition of Sludge. All sludge intended for incineration shall not meet the criteria for hazardous waste.
- E. Odor Control. Any sludge incinerator must comply with Part 120-05-17 of this Title, or other rules and regulations pertaining to odors.
- F. Transportation. All transportation of sludge shall comply with § 3.14 of this Part.
- G. Regional Incineration. This subrule applies to any incinerators that incinerate or propose to incinerate sludge from more than one publicly owned treatment works or privately owned treatment works. All such incinerators shall operate under an Order of Approval and shall meet the requirements in this subrule.
  - 1. Sludge Approval. The owner or operator of an incinerator shall obtain prior approval from the department for the sludge from each publicly owned treatment works or privately owned treatment works that is proposed to be incinerated. The owner or operator of an incinerator proposing to incinerate sludge from multiple publicly owned treatment works or privately owned treatment works shall submit the following information to the department:
    - a. Name and address of publicly owned treatment works or privately owned treatment works where the sludge is generated;
    - b. Description of the publicly owned treatment works or privately owned treatment works including but not limited to the type of wastewater treatment employed and design flow;
    - c. Estimate of how much sludge in dry tons/year is generated by the publicly owned treatment works or privately owned treatment works;
    - d. Estimate of how much sludge in dry tons/year from publicly owned treatment works or privately owned treatment works will be incinerated at the regional incinerator;
    - e. Description of the sludge characteristics including but not limited to whether the sludge is liquid or solid and the average moisture content of the sludge;
    - f. Name and address of the transporter;

- g. Copy of results for sludge testing using the Toxicity Characteristics Leaching Procedure for the parameters listed in § 3.31 of this Part (testing shall have been performed no more than one (1) year prior to submittal);
  - h. Proposed dates for the regional incinerator to incinerate sludge from the publicly owned treatment works or privately owned treatment works; and,
  - i. Explanation of available of storage, dewatering and incineration capacity at the regional incinerator.
- 2. Sludge Analysis. A sludge sample shall be collected daily from the incinerator sludge storage tank and composited into one sample each month which shall be analyzed for total metals.
- 3. Emergency Contingency Plan. All regional incinerators shall have an emergency contingency plan in place which outlines procedures for continued, uninterrupted disposal of sludge in the event that the regional incinerator is not able to accept and/or incinerate sludge for any reason including mechanical failure. The emergency contingency plan shall include a listing of alternate disposal sites for sludge.
- 4. Reporting. The owner or operator of a regional incinerator shall submit monthly reports to the department no later than the 15th day of the following month that includes the following information:
  - a. Names of all publicly owned treatment works and privately owned treatment works from which incinerated sludge was generated from;
  - b. Quantity of sludge incinerated including number of loads received, total gallons received, average moisture content of sludge, and total dry tons of sludge received from each publicly owned treatment works or privately owned treatment facility; and,
  - c. Copy of sludge analysis required in § 3.15(G)(2) of this Part.
- H. Submissions for Approval. The following submissions are required as part of an Application for Order of Approval for incineration of sludge and must be stamped by a registered professional engineer or land surveyor.
  - 1. Application Form. The applicant shall provide information on the proposed sludge management activity on an application form obtained from the department.
  - 2. Management Plan. Any owner or applicant who wishes to engage in sludge incineration must submit a Management Plan describing

compliance with the requirements of these rules and regulations to the Director to be reviewed and evaluated individually before approval is issued. An owner or applicant seeking to operate as a regional incinerator shall also describe compliance with requirements in § 3.15(G) of this Part.

### **3.16 Co-Disposal of Sludge and Solid Waste**

- A. This rule applies to the disposal of sludge by burial at a solid waste landfill approved for the disposal of solid waste by the Department. Any such solid waste landfill must operate under an Order of Approval.
- B. Sludge Analysis. All sludge intended for disposal at a solid waste landfill may be required to be tested using the Toxicity Characteristic Leaching Procedure for the parameters listed in § 3.31 of this Part and the results submitted to the Office of Water Resources. The owner or operator of the facility that generated the sludge shall be responsible for all analyses. The Director shall determine the testing and reporting frequency.
- C. Condition of Sludge. All sludge intended for disposal at a solid waste landfill shall be treated by one of the Processes to Significantly Reduce Pathogens described in § 3.28 of this Part. Such treatment shall be the responsibility of the owner or operator of the facility that generated the sludge. All sludge intended for disposal at a solid waste landfill shall not meet the criteria for hazardous waste.
- D. Cover Material. A soil cover of at least six (6) inches shall be applied to all sludge, Composted sludge or treated sludge deposits daily to control disease vectors and nuisance conditions.
- E. Transportation. All transportation of sludge shall comply with § 3.14 of this Part.
- F. Odor Control. Any such solid waste landfill site must comply with Part 120-05-17 of this Title, and other rules and regulations pertaining to odors.
- G. Submissions for Approval. The following submissions are required as part of an Application for Order of Approval for incineration of sludge and must be stamped by a registered professional engineer or land surveyor.
  - 1. Application Form. The applicant shall provide information on the proposed sludge management activity on an application form obtained from the department.
  - 2. Management Plan. Any owner or applicant who wishes to engage in the disposal of sludge by burial at a solid waste landfill must submit a plan describing compliance with the requirements in this rule to the Director to be reviewed and evaluated individually before approval is issued.



### **3.17 Ocean Disposal**

The discharge or disposal of sludge, Composted sludge or treated sludge into the waters of the State is prohibited in accordance with R.I. Gen. Laws Chapter 46-12.

### **3.18 Notification of Closure and Closure Procedure**

- A. Land Disposal Facilities or Sites. The owner of a land disposal site shall notify the Office of Water Resources in writing within ninety (90) days prior to the date the owner intends to close said site. The notification shall provide that the owner will physically remove all materials on site or the owner will abide by the closure plan, including the post-closure monitoring and financial provisions, as submitted by the applicant and approved by the Office of Water Resources under § 3.9(N)(4) of this Part.
- B. Other Facilities or Sites. The owner of any facility or site other than a land disposal site shall notify the Office of Water Resources in writing at least thirty (30) days prior to the date the owner intends to close said facility or site. Before a facility or site will be considered closed, the Office of Water Resources shall conduct a final investigation to determine compliance with the provisions of these rules and regulations and the approved Management Plan.

### **3.19 Limited Access**

Operations of a facility or site shall be limited to those hours specified in the approved Management Plan.

### **3.20 Sludge Release**

- A. In the event of a release or spill of sludge, the owner or operator of the facility or site where the sludge release occurred or the transporter (if the release occurred during transport) shall be required to do the following:
  - 1. Immediately take action to contain the release, minimize the environmental impact, and begin clean up procedures.
  - 2. Verbally notify the Department within 24 hours of the release with the following information:
    - a. The date, time and location of the release;
    - b. The quantity of sludge released and the quantity of sludge recovered, in gallons and wet tons;
    - c. The quantity and final disposition of any sludge not recovered;

- d. The name, address and telephone number of the driver involved (if sludge release occurs during transport);
  - e. The name, address and telephone number of the facility or site that generated the sludge;
  - f. The approximate distance to any surface waters and storm drains;
  - g. The actions taken to control the extent of the release and minimize the environmental impact; and,
  - h. Future actions necessary to clean up the release, if applicable.
- 3. Submit a certified letter to the Department within five (5) days of the release that includes but is not limited to the information required in § 3.20(A)(2) of this Part signed by the owner of the facility or site where the release occurred. In the event that the release occurred during transport, the transporter shall submit the certified letter.
- 4. Notification of the release to the Department shall not be required if all of the following conditions are met:
  - a. The release is less than 25 gallons or 5 cubic feet if the sludge contains greater than 10 percent solids;
  - b. The release is immediately contained;
  - c. The release is completely removed within 24 hours; and,
  - d. The release does not discharge to a surface water or storm drain system.

### **3.21 Existing Facilities or Sites**

All facilities or sites that are operating on the effective date of these rules and regulations (the "existing facilities") may continue to operate in compliance with their current Orders of Approval, which shall remain in full force and effect unless suspended or revoked by the Director in accordance with § 3.23 of this Part.

### **3.22 Variances**

- A. Any owner or applicant may submit a written request to the Director for a variance from some or all provisions of these rules and regulations.
- B. The owner or applicant shall have the burden of proving by clear and convincing evidence that a variance should be granted because alternative design or operating standards or alternative methods proposed in the variance application fulfill the purposes of the rules and regulations from which the variance is

requested and shall have no adverse effect on public health and the environment.

- C. The Director may require that the applicant provide notification of any request for variance to all potentially affected parties as determined by the Director. At a minimum, the applicant may be required to notify all abutters of the proposed facility or site. The Director may schedule a public hearing as required pursuant to R.I. Gen. Laws Chapter 42-35 to solicit public comment prior to rendering a decision on the variance request. The applicant shall be required to pay the expenses for notice and hearing.
- D. The Director's decision to grant or deny a variance shall be in writing and may, as a condition of granting the variance, impose appropriate requirements necessary to protect the public health and environment.
- E. Issuance of a variance pursuant to this rule does not relieve the holder of the variance from complying with requirements of these rules and regulations which have not been the subject of a variance.

### **3.23 Denial, Suspension, Revocation of Approval**

- A. The Director may suspend or revoke, in whole or in part, an approval for cause, including, but not limited to:
  - 1. Failure to comply with these rules and regulations;
  - 2. Refusal to permit a reasonable inspection;
  - 3. Information indicating that the facility or site may result in probable harm to the environment or pose a threat to the health, safety and/or welfare of the public;
  - 4. The information on the Application for Order of Approval or in any other material in support of the application is found to be false, misleading, or erroneous; or,
  - 5. Failure to comply with any conditions or provisions of the Order of Approval.
- B. Whenever the Director determines that a facility or site is not being operated in conformance with these rules and regulations or the Order of Approval, the Director may order the owner to take appropriate corrective action necessary to secure compliance with these rules and regulations and to order closure of said facility or site.
- C. The Director may deny an application for failure to satisfy the requirements of these rules and regulations.

- D. A notice of suspension or revocation of an approval or the denial of an application shall be in the form of a letter notifying the owner or operator of the facility or site or subsequent transferee of the suspension, revocation, or denial and the reasons for the suspension, revocation, or denial.
- E. Any person served with a notice of suspension or revocation of an approval or the denial of an application may request an adjudicatory hearing to contest the suspension, revocation or denial as set forth in § 3.23 of this Part. A notice of suspension, revocation or denial automatically becomes a final order of the Director enforceable in Superior Court upon failure to file a timely request for said adjudicatory hearing (as described in § 3.23 of this Part).

### **3.24 Penalties**

Penalties may be assessed in accordance with R.I. Gen. Laws Chapters 46-12, 23-18.9, 23-19.1, 42-17.1, 42-17.6, and Part 130-00-1 of this Title for any violation of these rules and regulations.

### **3.25 Appeals**

- A. General. The procedures for appeal of Departmental decisions pursuant to the provisions of R.I. Gen. Laws Chapter 42-35 are contained in both Part 10-00-1 and Part 20-00-1 of this Title.
- B. Appeal Procedure for Approval Denials. Any person whose approval application is denied may appeal to the Director for review of the decision on which the denial is based by filing an appeal with DEM/Administrative Adjudication.
  - 1. Filing of Appeal. All appeals shall be in writing and shall be filed with and received by DEM/Administrative Adjudication within thirty (30) days after the effective date of the denial of the subject application. See R.I. Gen. Laws § 42-17.7-9.
  - 2. Contents of Appeal. Every appeal shall contain a detailed basis upon which the appeal is taken.
  - 3. Notice of Administrative Hearing. Upon the filing of an appeal with DEM/Administrative Adjudication, and once the hearing schedule allows, DEM/Administrative Adjudication shall notify by first class mail those persons as determined by the Director of the date, time and place of the adjudicatory hearing, in conformance with R.I. Gen. Laws § 42-35-9.
- C. Appeal Procedure for Notice of Violations. Any person who has received a Notice of Violation (NOV) alleging violation of these rules and regulations, or whose approval has been suspended or revoked may appeal to the Director for review of the decision on which the NOV, suspension or revocation is based by filing an appeal with DEM/Administrative Adjudication.

1. Filing of Appeal. All appeals shall be in writing and shall be filed with and received by DEM/Administrative Adjudication within twenty (20) days after the date of receipt of the subject NOV, suspension or revocation. See R.I. Gen. Laws § 42-17.7-9.
2. Contents of Appeal. Every appeal shall contain a detailed basis upon which the appeal is taken. See R.I. Gen. Laws § 42-17.7-9.

### **3.26 Severability**

If any provision of these rules and regulations, or the application thereof to any person or circumstances, is held invalid by a court of competent jurisdiction, the validity of the remainder of the rules and regulations shall not be affected thereby.

### **3.27 Superseded Rules and Regulations**

On the effective date of these rules and regulations, all previous rules and regulations, and any policies regarding the administration and enforcement of sewage sludge management shall be superseded. However, any enforcement action taken by, or application submitted to, the Department prior to the effective date of these rules and regulations shall be governed by the rules and regulations in effect at the time the enforcement action was taken, or application filed.

### **3.28 Appendix 1 - Processes to Significantly Reduce Pathogens**

- A. Aerobic Digestion. The process is conducted by agitating sludge with air or oxygen to maintain aerobic conditions at residence times ranging from 60 days at 15°C to 40 days at 20°C.
- B. Air Drying. Sludge is dried on sand beds or on paved or unpaved basins. A minimum of three months is needed, two months of which temperatures average on a daily basis above 0°C.
- C. Anaerobic Digestion. The process is conducted in the absence of air at residence times ranging from 60 days at 20°C to 15 days at 35°C to 55°C.
- D. Composting. Either the within-vessel, static aerated pile or windrow composting method is used to maintain the temperature of the sludge at 40°C or higher for 5 days. For 4 hours during the 5-day period, the temperature in the compost pile exceeds 55°C.
- E. Lime Stabilization. Sufficient lime is added to the sludge to produce a pH of 12 after 2 hours of contact. pH measurements shall be performed at 25°C or corrected to 25°C.

- F. Other Methods. Other methods or operating conditions, if accepted by the U.S. Environmental Protection Agency, may be used if pathogens are reduced to an extent equivalent to the reduction achieved by any of the above methods.

### **3.29 Appendix 2 - Processes to Further Reduce Pathogens**

- A. Composting. Using either the within-vessel composting method or the static aerated pile composting method, the temperature of the sewage sludge is maintained at 55°C or greater for three days. Using the windrow composting method, the temperature of the sewage sludge is maintained at 55°C or greater for at least 15 days. During the period when the compost is maintained at 55°C or greater, there shall be a minimum of five turnings of the windrow.
- B. Heat Drying. Sewage sludge is dried by direct or indirect contact with hot gases to reduce the moisture content of the sewage sludge to 10 percent or lower. Either the temperature of the sewage sludge particles exceed 80°C or the wet bulb temperature of the gas in contact with the sludge at the point where it leaves the dryer exceeds 80°C.
- C. Heat Treatment. Liquid sludge is heated to a temperature of 180°C or higher for 30 minutes.
- D. Thermophilic Aerobic Digestion. Liquid sludge is agitated with air or oxygen to maintain aerobic conditions at residence times of 10 days at 55°C to 60°C.
- E. Beta Ray Irradiation. Sludge is irradiated with beta rays from an accelerator at dosages of at least 1.0 megarad at room temperature (ca. 20°C).
- F. Gamma Ray Irradiation. Sludge is irradiated with gamma rays from certain isotopes, such as Cobalt 60 and Cesium 137 at room temperature (ca. 20°C).
- G. Pasteurization. Sludge is maintained at a minimum temperature of 70°C for at least 30 minutes.
- H. Other Methods. Other methods or operating conditions if acceptable by the U.S. Environmental Protection Agency may be used if pathogens are reduced to an extent equivalent to the reduction achieved by any of the above methods.

### **3.30 Appendix 3 - Vector Attraction Reduction Requirements**

- A. Reduction in Volatile Solids Content. The mass of volatile solids in the sewage sludge shall be reduced by a minimum of 38 percent (see calculation procedures in "Environmental Regulations and Technology, Control of Pathogens and Vector Attraction in Sewage Sludge", EPA/625/R-92/013, July 2003, U.S. Environmental Protection Agency, Cincinnati, Ohio 45268).
- B. Additional Digestion of Anaerobically Digested Biosolids. When the 38 percent volatile solids reduction requirement in option A cannot be met for an

anaerobically digested sewage sludge, vector attraction reduction can be demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30°C and 37°C. When at the end of the 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved.

- C. Additional Digestion of Aerobically Digested Biosolids. When the 38 percent volatile solids reduction requirement in option A cannot be met for an aerobically digested sewage sludge, vector attraction reduction can be demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20°C. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 15 percent, vector attraction reduction is achieved.
- D. Specific Oxygen Uptake Rate (SOUR) for Aerobically Digested Biosolids. The specific oxygen uptake rate (SOUR) for sewage sludge treated in an aerobic process shall be equal to or less than 1.5 milligrams of oxygen per hour per gram of total solids (dry weight basis) at a temperature of 20°C.
- E. Aerobic Processes at Greater Than 40°C. Sewage sludge shall be treated in an aerobic process for 14 days or longer. During that time, the temperature of the sewage sludge shall be higher than 40°C and the average temperature of the sewage sludge shall be higher than 45°C.
- F. Addition of Alkaline Material. The pH of sewage sludge shall be raised to 12 or higher by alkali addition and, without the addition of more alkali, shall remain at 12 or higher for two hours and then at 11.5 or higher for an additional 22 hours. PH measurements shall be performed at 25°C or corrected to 25°C.
- G. Moisture Reduction of Biosolids Containing No Unstabilized Solids. Sewage sludge shall not contain unstabilized solids generated during primary treatment and the solids content of the sewage sludge shall be at least 75 percent before the sewage sludge is mixed with other materials. The solids content of the sewage sludge shall be achieved by removing water, not by adding inert materials.
- H. Moisture Reduction of Biosolids Containing Unstabilized Solids. Solids content of the sewage sludge shall be at least 90 percent, regardless of whether the sewage sludge is from primary treatment. The solids content of the sewage sludge shall be achieved by removing water, not by adding inert materials. The sewage sludge shall not be exposed to high humidity prior to use or disposal to prevent the outer surface of the sewage sludge from gaining moisture content.
- I. Biosolids Injection:
  - 1. Sewage sludge shall be injected below the surface of the land, and,

2. No significant amount of the sewage sludge shall be present on the land surface within 1 hour after the sewage sludge is injected, and,
  3. When the sewage sludge that is injected below the surface of the land meets the pathogen limits in Appendix 5, § 3.32 of this Part, the sewage sludge shall be injected below the land surface within 8 hours after being discharged from the pathogen reduction process.
- J. Incorporation of Biosolids into the Soil:
1. Sewage sludge applied to the land surface or placed on a surface disposal site shall be incorporated into the soil within 6 hours after application to or placement on the land, and,
  2. When sewage sludge that is incorporated into the soil meets the pathogen limits in § 3.32 of this Part, the sewage sludge shall be applied to or placed on the land within 8 hours after being discharged from the pathogen reduction process.
- K. Covering Sludge (Land Disposal Only). Sewage sludge placed on a surface disposal site shall be covered with soil or other material at the end of each operating day.

### 3.31 Appendix 4 - Maximum Concentration of Contaminants for the Toxicity Characteristic Leachate Procedure

EPA Hazardous Waste Number	Contaminant	Regulatory Limit (mg/L)
D004	Arsenic	5.0
D005	Barium	100.0
D018	Benzene	0.5
D006	Cadmium	1.0
D019	Carbon tetrachloride	0.5
D020	Chlordane	0.03
D021	Chlorobenzene	100.0
D022	Chloroform	6.0



D007	Chromium	5.0
D023	o-Cresol	200.0
D024	m-Cresol	200.0
D025	p-Cresol	200.0
D026	Cresol	200.0
D016	2,4-D	10.0
D027	1,4-Dichlorobenzene	7.5
D028	1,2-Dichloroethane	0.5
D029	1,1-Dichloroethylene	0.7
D030	2,4-Dinitrotoluene	0.13
D012	Endrin	0.02
D031	Heptachlor (and its hydroxide)	0.008
D032	Hexachlorobenzene	0.13
D033	Hexachlorobutadiene	0.5
D034	Hexachloroethane	3.0
D008	Lead	5.0
D013	Lindane	0.4
D009	Mercury	0.2
D014	Methoxychlor	10.0

D035	Methyl ethyl ketone	200.0
D036	Nitrobenzene	2.0
D037	Pentachlorophenol	100.0
D038	Pyridine	5.0
D010	Selenium	1.0
D011	Silver	5.0
D039	Tetrachloroethylene	0.7
D015	Toxaphene	0.5
D040	Trichloroethylene	0.5
D041	2,4,5-Trichlorophenol	400.0
D042	2,4,6-Trichlorophenol	2.0
D017	2,4,5-TP (Silvex)	1.0

### 3.32 Appendix 5 - Class A Biosolids Limits

#### A. Metals:

METAL	LIMIT, mg/kg (dry weight)
Arsenic	41
Cadmium	39
Copper	1500
Lead	300

Mercury	17
Nickel	420
Selenium	100
Zinc	2800

B. Pathogens. The following pathogen limit must be met:

<b>PATHOGEN</b>	<b>LIMIT</b>
Fecal Coliform Bacteria	Less than 1000 Most Probable Number per 1 gram of total solids (dry weight)

1. Pathogen reduction must take place before or at the same time as vector attraction reduction except when options in §§ 3.30(F) through (J) of this Part are used.

### 3.33 Appendix 6 - Class B Biosolids Limits and Characteristics

A. Metals:

<b>METAL</b>	<b>LIMIT, mg/kg (dry weight)</b>
Arsenic	75
Cadmium	85
Copper	4300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100

Zinc	7500
------	------

B. Characteristics:

<b>CHARACTERISTICS</b>
Ratio of Sludge to Bulking Agent (if applicable)
Density of Composted Sludge (if applicable)
Moisture Content (%)
Total Volatile Solids (%)
Ammonia Nitrogen (%)
Nitrate Nitrogen (%)
Total Nitrogen (%)
Available Phosphoric Acid (%)
Soluble Potash (%)
Specific Conductivity
pH

### 3.34 Appendix 7 – Maximum Cumulative Loading Rates

METAL	DRY TONS PER ACRE
Arsenic	<u>41 kg As/hectare</u> (___ppm As) x 0.002
Cadmium	<u>39 kg Cd/hectare</u> (___ppm Cd) x 0.002

Copper	<u>1500 kg Cu/hectare</u> (___ppm Cu) x 0.002
Lead	<u>300 kg Pb/hectare</u> (___ppm Pb) x 0.002
Mercury	<u>17 kg Hg/hectare</u> (___ppm Hg) x 0.002
Nickel	<u>420 kg Ni/hectare</u> (___ppm Ni) x 0.002
Selenium	<u>100 kg Se/hectare</u> (___ppm Se) x 0.002
Zinc	<u>2800 kg Zn/hectare</u> (___ppm Zn) x 0.002
The parts per million of each metal are provided in the sludge analyses. The lowest value is chosen from the above nine (9) calculations as the maximum cumulative tons of sludge which can be applied per acre.	

**250-RICR-150-10-3**

**TITLE 250 - DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**

**CHAPTER 150 - WATER RESOURCES**

**SUBCHAPTER 10 - WASTEWATER & STORM WATER**

**PART 3 - RULES AND REGULATIONS FOR SEWAGE SLUDGE MANAGEMENT (250-RICR-150-10-3)**

Type of Filing: Refile Capabilities

**Department of State**

---

Regulation Effective Date

Original Signing Date

---

Department of State Initials

Department of State Date