

NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES

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CHAPTER Env-Sw 800 LANDFILL REQUIREMENTS

Statutory Authority: RSA 149-M:7

REVISION NOTE:

Document #8459, effective 10-28-05, readopted with amendments, renumbered, and redesignated former Chapter Env-Wm 2500 as Env-Sw 800, pursuant to a rules reorganization plan for Department rules approved by the Director of the Office of Legislative Services on 9-7-05. The source notes for each section of Env-Sw 800 identify the former subtitle Env-Wm and number for the respective rule prior to Document #8459.

PART Env-Sw 801 APPLICABILITY

Env-Sw 801.01 Applicability. The rules in this chapter shall apply to landfills.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2501.01); ss by #10597, eff 7-1-14

PART Env-Sw 802 PERMITTING REQUIREMENTS

Env-Sw 802.01 Permit Required.

(a) A permit issued pursuant to the solid waste rules shall be required for construction, operation and closure of a landfill, unless exempt pursuant to Env-Sw 302.

(b) The type of permit required shall be as specified in Env-Sw 302.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2502.01); ss by #10597, eff 7-1-14

Env-Sw 802.02 Permit Application Requirements. The applicant for a landfill permit shall prepare the application in accordance with:

- (a) Env-Sw 314 for a standard permit;
- (b) Env-Sw 313 for an emergency permit;
- (c) Env-Sw 312 for a research and development permit; and
- (d) Env-Sw 311 for a permit-by-notification.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2502.02); ss by #10597, eff 7-1-14

PART Env-Sw 803 FEDERAL REQUIREMENTS FOR MSW LANDFILLS

Env-Sw 803.01 Purpose. The purpose of the rules in this part is to identify facilities subject to the federal requirements for municipal solid waste landfills (MSWLFs) in 40 CFR 258.

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Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2503.01); ss by #10597, eff 7-1-14

Env-Sw 803.02 Applicability.

(a) The rules in Env-Sw 803.03 identify the circumstances under which a MSWLF shall be subject to the requirements in 40 CFR 258.

(b) The rules in Env-Sw 803.04 identify the criteria in 40 CFR 258 and the solid waste rules which apply to MSWLFs which are subject to 40 CFR 258.

Source. #5172, eff 7-1-91; ss by #6372, eff 11-16-96; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2503.02); ss by #10597, eff 7-1-14

Env-Sw 803.03 Applicability of Federal Law. In order to determine whether a MSWLF is subject to the requirements of 40 CFR 258, the following provisions and definitions from 40 CFR 258.1 and 40 CFR 258.2 shall apply:

(a) MSWLFs that stopped receiving waste on or before October 9, 1991 shall be exempt from the requirements of 40 CFR 258;

(b) MSWLFs that received 100 tons per day of waste or less after October 9, 1991 and stopped receiving waste prior to April 9, 1994 shall be exempt from the requirements of 40 CFR 258 except for the final cover requirements specified in 40 CFR 258.60(a) provided the final cover was fully installed by October 9, 1994. If the final cover was not fully installed by October 9, 1994, the MSWLFs shall be subject to all requirements of 40 CFR 258;

(c) MSWLFs that received 100 tons per day of waste or less on or after April 9, 1994 shall be subject to all requirements of 40 CFR 258;

(d) MSWLFs that received greater than 100 tons per day of waste after October 9, 1991 and stopped receiving waste prior to October 9, 1993 shall be exempt from the requirements of 40 CFR 258 except for the final cover requirements specified in 40 CFR 258.60(a) provided the final cover was fully installed by October 9, 1994. If the final cover was not fully installed by October 9, 1994, the MSWLFs shall be subject to all requirements of 40 CFR 258;

(e) MSWLFs that received greater than 100 tons per day of waste on or after October 9, 1993 shall be subject to all requirements of 40 CFR 258; and

(f) In determining the scope and applicability of the federal requirements, the definitions specified in 40 CFR 258.2 for the following terms shall be used:

- (1) Active life;
- (2) Active portion;
- (3) Director;
- (4) Household waste;
- (5) Industrial solid waste;

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- (6) Owner;
- (7) Saturated zone;
- (8) Sludge;
- (9) Solid waste;
- (10) State;
- (11) State director; and
- (12) Waste management unit boundary.

Source. #6372, eff 11-16-96; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2503.03); ss by #10597, eff 7-1-14

Env-Sw 803.04 Standards Specific to MSWLFs Subject to 40 CFR 258.

(a) Any MSWLF that is identified by Env-Sw 803.03 as being subject to 40 CFR 258 shall comply with the following provisions of 40 CFR 258 in addition to the requirements in Env-Sw 900, Env-Sw 1000, Env-Sw 1100, Env-Sw 1400, Env-Sw 1600, and this chapter:

- (1) Location restrictions specified in 40 CFR 258.10 through 258.16;
- (2) Operating criteria specified in 40 CFR 258.20, 258.21, 258.23, 258.24, 258.28 and 258.29;
- (3) Design criteria specified in 40 CFR 258.40;
- (4) Groundwater monitoring and corrective action requirements specified in 40 CFR 258.53 through 258.58;
- (5) Closure and post-closure requirements specified in 40 CFR 258.60(i) and 258.61; and
- (6) Financial assurance mechanisms specified in 40 CFR 258, subpart G.

(b) The provisions specified in (a)(1) through (a)(6) above shall not be waived under Env-Sw 202.

Source. #6372, eff 11-16-96; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2503.04); ss by #10597, eff 7-1-14

PART Env-Sw 804 SITING REQUIREMENTS

Env-Sw 804.01 Applicability.

(a) The siting requirements in this part shall apply to all landfills except:

- (1) Facilities that hold and continue to operate under a permit issued pursuant to RSA 149-M prior to the 2005 readoption of the solid waste rules and any facilities scheduled to close;
- (2) Permit-exempt facilities identified in Env-Sw 302.03 or Env-Sw 810;
- (3) Permit-by-notification facilities having an active life of 90 days or less;
- (4) Research and development permit facilities, as provided by Env-Sw 312.02(b); and

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- (5) Emergency permit facilities, as provided by Env-Sw 313.02(b).

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; ss by #6894-B, eff 12-1-98; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2504.01); ss by #10597, eff 7-1-14

Env-Sw 804.02 Groundwater Protection Standards.

(a) A landfill shall not be sited within the well head protection area of a community or non-community, non-transient water supply well system as delineated in the department's source water protection area inventory.

(b) A landfill and all associated leachate storage units shall be located only in areas where groundwater monitoring for release detection, characterization and remediation can be conducted prior to a release having an adverse affect on a water supply.

(c) Identification of the areas cited in (b) above shall be based upon a hydrogeologic investigation which provides all site specific information required to model the pre-construction and post-construction groundwater and surface water regimen.

(d) The base of the bottom liner system, or the base of the facility if unlined, shall be a minimum of 6 feet above the seasonal high groundwater table and the confirmed bedrock surface.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2504.02); ss by #10597, eff 7-1-14

Env-Sw 804.03 Surface Water Protection Standards.

(a) The location of a landfill relative to surface water resources shall comply with the requirements of RSA 485-A.

(b) A landfill and all associated leachate storage units shall be located only in areas where potential adverse effects to surface water quality, due to erosion, sedimentation, siltation, flood, or discharge of contaminants, can be prevented or minimized and mitigated by facility design.

(c) Identification of the areas cited in (b) above shall be based on a thorough hydrogeological investigation to demonstrate the following:

- (1) Compliance with Env-Sw 804.02;
- (2) That engineering design measures can be incorporated to control erosion, sedimentation and siltation; and
- (3) The potential release of contaminants to surface waters can be prevented, attenuated or otherwise remediated.

(d) The footprint of a landfill shall not be located within 200 feet of any perennial surface water body, measured from the closest bank of a stream and closest shore of a lake, as applicable.

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(e) The footprint of a landfill shall not be located within 200 feet upgradient and 100 feet downgradient of a wetland within the jurisdiction of RSA 482-A, excluding any drainage appurtenances related to the site, that is not allowed to be filled under the authority of RSA 482-A.

(f) The footprint of a landfill shall not be located within 1,000 feet upgradient of a surface water reservoir or intake used for a community drinking water supply.

(g) The footprint of a landfill shall not be located within the 100-year flood hazard zone.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2504.03); ss by #10597, eff 7-1-14

Env-Sw 804.04 Set-back Requirements.

(a) There shall be a minimum 100-foot buffer strip between the property line and the footprint of the landfill.

(b) There shall be a minimum 300-foot buffer between the footprint of the landfill and Class I and Class II roads and a minimum 100-foot buffer between the footprint of the landfill and Class III through Class VI roads.

(c) For landfills sited on a parcel of land on which a landfill which is subject to a standard permit exists on the 2014 effective date of this chapter, a minimum distance of 500 feet shall be maintained between the footprint of the landfill and all existing residences not owned by the applicant.

(d) For facilities approved after the 2014 effective date of this chapter and sited on a parcel of land on which no landfill having a standard permit exists, a minimum 500-foot vegetated buffer shall be established and maintained as provided in Env-Sw 805.11 between the footprint of the landfill and all properties not owned by the applicant or its affiliates that either contain residences or are zoned for residential use.

(e) The footprint of a landfill receiving putrescible wastes shall not be located within 10,000 feet of any airport runway used by turbojet aircraft or 5,000 feet of any airport runway used by only piston-type aircraft.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2504.04); ss by #10597, eff 7-1-14

Env-Sw 804.05 Geologic Siting Limitations.

(a) The footprint of a landfill and associated leachate storage units shall be a minimum of 200 feet from faults that have had displacement in Holocene time, meaning from Pleistocene to present or within the last 11,000 years.

(b) No landfill footprint or associated leachate storage units shall overlie an area underlain by karstified dolomite or limestone or an area susceptible to mass movements of earth material such as landslides, rockfalls, mudslides, slumps, earth flows, or subsidence.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by

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#8459, eff 10-28-05 (formerly Env-Wm 2504.05); ss by #10597, eff 7-1-14

Env-Sw 804.06 Other Siting Limitations. A new landfill shall be sited only on property which is owned by the permittee.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2504.06); ss by #10597, eff 7-1-14

PART Env-Sw 805 DESIGN AND CONSTRUCTION REQUIREMENTS

Env-Sw 805.01 Applicability.

(a) The design requirements in this part shall apply to all landfills, except:

- (1) Portions of existing permitted facilities which were constructed or approved for construction as of October 29, 1997;
- (2) Permit-exempt facilities identified in Env-Sw 302.03 or Env-Sw 810;
- (3) Permit-by-notification facilities having an active life of 90 days or less;
- (4) Research and development permit facilities, as provided by Env-Sw 312.02(b); and
- (5) Emergency permit facilities, as provided by Env-Sw 313.02(b).

(b) The design requirements in this part shall apply as the complement of the design requirements in Env-Sw 1004 for all facilities, Env-Sw 1103 for facilities having an active life longer than 90 days, Env-Sw 1200 for permit-by-notification facilities and, depending on the type of waste managed, Env-Sw 900.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2505.01); ss by #10597, eff 7-1-14

Env-Sw 805.02 General Landfill Design Requirements.

(a) A lined landfill shall incorporate the following design features:

- (1) A foundation pursuant to Env-Sw 805.03;
- (2) A liner system pursuant to Env-Sw 805.05;
- (3) A leak detection and location system pursuant to Env-Sw 805.07;
- (4) A groundwater and surface water monitoring system, if required pursuant to RSA 485-C and Env-Or 700 or predecessor rules Env-Wm 1403;
- (5) A stormwater management system pursuant to Env-Sw 805.09;
- (6) A decomposition gas control system pursuant to Env-Sw 806.07;
- (7) A final capping system pursuant to Env-Sw 805.10; and
- (8) Facility structures as necessary to house, maintain and repair equipment and supplies, and to accommodate the needs of facility personnel relative to shelter, sanitation and communication.

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(b) An unlined landfill shall incorporate the following design features:

- (1) A groundwater and surface water monitoring system, if required by RSA 485-A or RSA 485-C;
- (2) A stormwater management system pursuant to Env-Sw 805.09;
- (3) A final capping system pursuant to Env-Sw 805.10; and
- (4) Facility structures as necessary to house, maintain and repair equipment and supplies, and to accommodate the needs of facility personnel relative to shelter, sanitation and communication.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2505.02); ss by #10597, eff 7-1-14

Env-Sw 805.03 Landfill Subgrade and Base Grade Standards.

- (a) The landfill subgrade shall be graded and prepared for landfill construction.
- (b) Subgrade materials shall have a saturated hydraulic conductivity of 1×10^{-4} centimeters per second (cm/sec) or less.
- (c) The subgrade shall have sufficient structural integrity to support the facility under all anticipated loading conditions during all phases of construction, operation and closure.
- (d) Engineering measures shall be incorporated in the design when necessary to ensure stability of the landfill during all phases of construction, operation and closure.
- (e) A stability analysis shall be submitted with the application to demonstrate compliance with requirements in (c) above and to support the facility design, including measures incorporated pursuant to (d) above, if any.
- (f) For geomembrane lined facilities, the subgrade below the liner shall:
 - (1) Be prepared to a depth which provides a uniform and consistent bedding layer which shall be stable under loading;
 - (2) Contain no stones greater than one inch in diameter, and no sharp or angular materials; and
 - (3) Be compacted to 95% of the maximum dry density as determined by ASTM International (ASTM) D 698-12 (Standard Effort) or ASTM D 1557-12 (Modified Effort).
- (g) Facility base grades shall be sloped to facilitate compliance with Env-Sw 805.06 and Env-Sw 806.05.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2505.03); ss by #10597, eff 7-1-14

Env-Sw 805.04 Liner Material and Construction Requirements.

- (a) Soil liners shall meet or exceed the following specifications:

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- (1) The liner shall be constructed of no less than 3 feet of a recompacted natural soil with uniform and consistent characteristics, or a uniform and consistent natural soil blended with an admixture, such as bentonite;
 - (2) Recomposition shall occur in lifts not to exceed the depth demonstrated in a test pad necessary to achieve a saturated hydraulic conductivity no greater than 1×10^{-7} cm/sec;
 - (3) The recompacted lifts shall be constructed in a step-wise manner to limit the potential for vertical channeling;
 - (4) Recomposition saturated hydraulic conductivity shall equal 1×10^{-7} cm/sec or less; and
 - (5) The liner shall be protected from damage due to frost, desiccation and differential movement.
- (b) Geomembrane liners shall meet or exceed the following specifications:
- (1) The liner material shall have a minimum thickness of 60 mils;
 - (2) The liner material shall be chemically compatible with anticipated waste and leachate characteristics; and
 - (3) Seaming methods which involve the use of solvents shall incorporate quality assurance/quality control procedures pursuant to Env-Sw 805.16 to assure protection of groundwater and surface water resources.
- (c) Composite liners shall consist of:
- (1) A geomembrane liner, as specified by (b) above; and
 - (2) A soil component as specified by (a) above or a manufactured geosynthetic clay liner.
- (d) All liners shall be constructed in accordance with a quality assurance/quality control plan established pursuant to Env-Sw 805.16.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2505.04); ss by #10597, eff 7-1-14

Env-Sw 805.05 Liner System Design Standards.

- (a) A liner system shall be comprised of the following components:
- (1) A liner which meets the requirements of Env-Sw 805.04;
 - (2) A leachate collection and removal system which meets the requirements of Env-Sw 805.06; and
 - (3) A leak detection and location system, if required by Env-Sw 805.07.
- (b) A landfill shall incorporate one or more liner systems, as specified in Env-Sw 805.12 through Env-Sw 805.15, based on the type of wastes to be received by the facility.
- (c) Multi-liner systems shall be designed to place one liner system over another liner system.
- (d) A single-lined facility shall incorporate one liner system as specified in Env-Sw 805.05(a).

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(e) A double-lined facility shall incorporate 2 liner systems as specified in Env-Sw 805.05(a), separated by drainage material as specified in (f) below.

(f) Except as provided by (g) below, each liner within a liner system shall be covered in the base area by an overlying layer of select granular soil materials 12 inches in depth or more as required to:

- (1) Sustain anticipated loading conditions;
- (2) Protect the underlying liners from puncture, including simultaneous puncture of multi-liner systems;
- (3) Assist in the transmission of leachate in accordance with Env-Sw 805.06 and Env-Sw 806.05; and
- (4) At multi-liner facilities, limit the potential for hydraulic head to be concurrently experienced on an underlying liner in the event a leak develops in an overlying liner.

(g) For multi-liner systems, geosynthetics may be used to separate the liners in areas of extended side slopes where placement and maintenance of granular materials is not possible or practical for reasons of stability.

(h) The design of all liner systems incorporating geomembrane materials shall include calculations to demonstrate stability, but in no case shall be designed to exceed a slope of 2 horizontal to 1 vertical.

(i) All liner systems shall be constructed by controlled methods, in accordance with a quality assurance/quality control plan established pursuant to Env-Sw 805.16.

(j) Liner systems shall not be penetrated by any appurtenances including pipes in low areas or in any location where leachate might collect.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2505.05); ss by #10597, eff 7-1-14

Env-Sw 805.06 Leachate Collection and Removal System Design Standards.

(a) Leachate collection and removal systems shall be required at all lined landfills, to collect and remove leachate contained within each liner system in conformance with Env-Sw 806.05.

(b) Leachate collection and removal systems shall be designed to be hydraulically separate from the stormwater management system(s).

(c) Leachate collection and removal systems shall be designed to function effectively during freezing and frozen-ground conditions.

(d) Leachate collection and removal systems shall be designed to function effectively during both the active life of the landfill and the landfill closure and post-closure period. Therefore, for the purpose of sizing the system(s) components and specifying materials with an appropriate design life expectancy, the leachate generation rates and volumes for the above specified time period shall be considered.

(e) Leachate collection and removal systems shall be designed to maintain one foot or less of hydraulic head on all portions of the liner, excluding the leachate collection sumps if any, during routine operations including the 25-year storm event with a duration equivalent to the time of concentration of the drainage area of the component being sized.

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(f) Leachate collection and removal systems shall be designed to manage the quantity of leachate to be generated by the 100-year storm event with a duration equivalent to the time of concentration of the drainage area which contributes to leachate generation, in a manner which shall:

- (1) Not allow a hydraulic head greater than one-foot to exist on any portion of the liner system, excluding the leachate collection sumps, if any, for longer than 7 days;
- (2) Provide storage and removal capabilities determined in accordance with (g) below if for a facility not directly connected to a permitted wastewater treatment facility or in accordance with (h) below if for a facility directly connected to a permitted wastewater treatment facility; and
- (3) Not rely on leachate recirculation as a factor in determining the required storage and removal capabilities, even if leachate recirculation will be a routine operating procedure at the facility.

(g) Leachate collection and removal systems which are not directly connected to a permitted wastewater treatment facility shall provide capacity for storing leachate as follows:

- (1) At least 15% of the 100-year storm storage volume, as specified by (f) above, shall be provided in primary storage units located outside the waste deposition area or in sumps located within the waste deposition area;
- (2) The number of walls or liners in the primary storage units shall be no less than the number of liners within the landfill; and
- (3) Containment for the volume of leachate produced by the 100-year storm event which exceeds the volume of the primary storage units shall be provided:
 - a. Within contingency storage units located outside the waste deposition area, which shall be leak tight and accessible for leak testing, inspection and repair, but not necessarily multi-walled; and
 - b. On the uppermost liner within a waste deposition area provided that:
 1. Storage on the liner in excess of one-foot of hydraulic head shall be limited to a period of 7 days or less, based on procedures identified in the leachate management plan provided pursuant to Env-Sw 806.05, including the pumping and removal rates required to reduce the hydraulic head within 7 days and the specifications for the equipment required to do so; and
 2. Systems relying on valve closure to initiate storage on the liner shall be fully equipped with automated notification alarms to minimize the potential for overflow, in accordance with (p) below.

(h) Leachate collection and removal systems which are directly connected to a permitted wastewater treatment facility shall be designed as follows:

- (1) The system shall provide leachate storage units outside the waste deposition area as necessary to meet the requirements of (f) above based on the allowable discharge rate of leachate to the wastewater treatment facility, pump capabilities and other such factors which limit the rate at which leachate removal can occur;
- (2) Compatible pumping and removal rates shall be provided as a component of the facility's leachate management plan, pursuant to Env-Sw 806.05; and
- (3) Systems relying on valve closure to initiate storage shall be fully equipped with automated notification alarms to minimize the potential for overflow, in accordance with (p) below.

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- (i) The various components of a leachate collection and removal system shall:
 - (1) Be chemically compatible with the anticipated waste and leachate characteristics;
 - (2) Provide access for monitoring flow, monitoring hydraulic head in the uppermost liner system, controlling flow and cleaning;
 - (3) Maintain integrity under both dynamic and static loading events for all phases of landfill development;
 - (4) Specify geotextiles based on calculations which incorporate the leachate generation and flow rates anticipated to occur during the operating and post-closure phases of the landfill; and
 - (5) Be designed to prevent the passage of fine particulates into the leachate collection and piping systems as well as mitigate against or eliminate the effects of any material capable of reducing the hydraulic flow capacity of the leachate collection and piping systems.
- (j) Pipes which require solvent welding shall not be used.
- (k) The drainage blanket shall:
 - (1) Be designed to meet the requirements of (e) and (f) above;
 - (2) Contain no more than 15% calcium carbonate to prevent deposition and clogging and otherwise be of a quality that shall not result in clogging of the leachate collection and removal system(s); and
 - (3) Be constructed in accordance with a quality assurance/quality control plan established pursuant to Env-Sw 805.16.
- (l) A facility shall not be designed to rely solely on managing leachate by recirculation methods.
- (m) Recirculation of leachate, if practiced, shall proceed only in accordance with the provisions of a leachate recirculation plan approved by the department as part of the facility's operating plan pursuant to Env-Sw 1105 based on the criteria in Env-Sw 806.05.
- (n) Leachate collection and removal systems which depend on routine pumping, rather than gravity operating methods, shall only be used at facilities where a full-time operator shall be present during normal operating hours and where auxiliary power and pumping equipment shall be available.
- (o) Pump stations located outside the waste deposition area shall be designed to provide the following:
 - (1) Backup pumping capacity;
 - (2) Backup power supply;
 - (3) High-water alarm; and
 - (4) Efficient operation during both average and peak flows.
- (p) Tanks, sumps or other storage units associated with leachate collection and removal systems shall be equipped with high-water alarms.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by

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#8459, eff 10-28-05 (formerly Env-Wm 2505.06); ss by #10597, eff 7-1-14

Env-Sw 805.07 Leak Detection and Location System Design Standards.

(a) A leak detection and location system designed to detect and isolate the location of leaks through a liner shall be required beneath each liner installed at a lined landfill, unless the potential for leakage through the bottom most liner is reduced by one or both of the following design features:

(1) Geonet is incorporated throughout the leachate collection and removal system for the bottom most liner, in order to rapidly convey leachate off the liner and thereby limit the potential for hydraulic head to develop on the liner; or

(2) The bottom most liner is a composite liner which meets the requirements of Env-Sw 805.04(c).

(b) Leak detection and location systems shall be designed to:

(1) Convey liquids to an observation point for detection, based on a maximum time of concentration equal to 24-hours under saturated hydraulic conditions; and

(2) Provide a means for isolating the potential location of a leak.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2505.07); ss by #10597, eff 7-1-14

Env-Sw 805.08 Groundwater and Surface Water Monitoring System Design Standards.

(a) At least one groundwater monitoring well shall be installed hydraulically upgradient from the landfill and at least 3 monitoring wells shall be installed in each down-gradient direction.

(b) The location, materials and specifications of the groundwater and surface water monitoring system shall comply with the requirements of RSA 485-C.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2505.08); ss by #10597, eff 7-1-14

Env-Sw 805.09 Stormwater Management System Design Standards.

(a) All landfills shall include a stormwater management system to:

(1) Divert run-on around or away from the facility;

(2) Control run-off discharge from the facility;

(3) Control erosion, sedimentation, siltation, and flooding; and

(4) Minimize the generation of leachate.

(b) Stormwater management systems shall be designed to accommodate the 25-year storm event of a duration equivalent to the time of concentration of the drainage area being served.

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(c) Stormwater management systems shall be designed to accommodate all phases of the landfill's active life, as well as the closure and post-closure period.

(d) Stormwater management systems shall be hydraulically separate from the leachate collection and removal system(s).

(e) Stormwater management systems shall be designed to function effectively during frozen ground conditions.

(f) Permanent sedimentation ponds and detention ponds shall be sized to handle the 25-year/24-hour storm event with no less than one foot of freeboard below the emergency spillway invert.

(g) Peak surface run-off from the landfill site during the 25-year storm event shall be controlled and maintained at the pre-development discharge rate, in accordance with RSA 485-A.

(h) All stormwater that contacts waste shall be managed as leachate unless representative analytical characterization conducted in accordance with the facility's approved operating plan demonstrates the liquid may be lawfully discharged to ground or surface waters without treatment.

(i) Perimeter drainage swales shall be provided to channel run-off during facility development based on the planned sequence of filling pursuant to Env-Sw 806.02 and during the facility's post-closure period.

(j) Perimeter drainage swales shall be designed and located to accommodate facility capping.

(k) Surface water run-on shall be diverted around and away from the facility by using berms and ditches or similar methods.

(l) Surface water run-off shall be controlled by using benches, terraces, diversion berms and diversion swales or similar methods.

(m) Erosion shall be controlled by using vegetation, terrace berms, silt fences and check dams or similar methods.

(n) Closed drainage systems, if used, shall include provisions for inspections, monitoring and maintenance.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; amd by #6894-B, eff 12-1-98; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2505.09); ss by #10597, eff 7-1-14

Env-Sw 805.10 Landfill Capping System Design Standards.

(a) Landfill capping systems shall be designed to meet the performance standards in Env-Sw 807.04 so as to:

(1) Reduce leachate generation by limiting to the extent practicable precipitation and surface water infiltration of the waste, through placement of either impermeable or low-permeable cover materials over landfilled areas;

(2) Promote drainage of stormwater and other surface waters away from and around the facility, by properly grading the facility and surrounding areas, and by constructing drainage structures, including berms, trenches, swales, ditches and detention ponds;

(3) Limit erosion and sedimentation by controlling stormwater drainage and by seeding, vegetating, riprapping or otherwise stabilizing surface soils against the effects of wind and water;

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(4) At facilities that will generate methane gas, control the release of methane gas from the facility by incorporating vents designed to function properly in all anticipated weather conditions, including heavy or drifting snow, or by incorporating recovery wells or similar methods, to assure compliance with Env-Sw 806.07;

(5) Protect or isolate the underlying waste materials from exposure to the environment to limit the attraction of vectors, production of odors, risk of injury or fire, and other threats to the public health and safety;

(6) Resist damage due to the influences of freeze-thaw cycles, settlement, loading or other anticipated conditions which, not properly considered during design, will result in over stressing the cap; and

(7) Remediate environmental damage resulting from the facility's operation, if determined necessary by the department on the basis of groundwater and surface water quality at the site or on the basis of other conditions involving environmental degradation at the site prior to closure.

(b) Lined landfill capping systems shall be designed in cross section according to the specifications provided in (e) below.

(c) Unlined landfill capping systems shall be designed in cross section according to the specifications provided in either (e) or (f) below.

(d) For unlined landfills, the type of capping system required pursuant to (e) or (f) below shall be based on which system type will meet the performance standards in Env-Sw 807.04, using the following factors to make the determination:

- (1) Type and quantity of waste received by the facility;
- (2) Size of facility footprint;
- (3) Compliance and performance history of the facility;
- (4) Extent of groundwater to waste contact zones, if any;
- (5) Groundwater and surface water quality at the facility site;
- (6) Proximity to drinking water supplies;
- (7) Age of the facility;
- (8) Site topography; and
- (9) Geologic and hydrogeologic characteristics of the site.

(e) Impermeable landfill capping systems shall, at a minimum, be comprised of the following layers, from the top of the waste to the top of the cap:

- (1) Layer one, immediately overlying the waste, shall:
 - a. Serve to provide a stable, properly graded base for the placement of layer 2;
 - b. Be designed to resist raveling, or the sifting of fines downward into the underlying wastes; and
 - c. Consist of no less than 12-inches of unspecified soil;

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(2) Layer 2 shall:

- a. Serve to protect layer 3 from potential damage by underlying coarse soil materials;
- b. Serve to transmit decomposition gases to gas vents if active gas extraction wells are not used;
- c. Consist of 12 inches of sand with 100% passing the one inch sieve and with no more than 12% passing the number 200 sieve on a weight basis if for a facility without an active gas extraction system or 6 inches of soil with 100% passing the one inch sieve if for a facility with an active gas extraction system; and
- d. Be constructed in accordance with a quality assurance/quality control plan established pursuant to Env-Sw 805.16;

(3) Layer 3 shall consist of an impermeable barrier which shall:

- a. Minimize the infiltration of water into underlying wastes so as to limit continued leachate production and the associated adverse impacts to the quality of groundwater and surface waters;
- b. Consist of a geomembrane with a minimum thickness of 40 mils or an impermeable soil, or admixture; and
- c. Be constructed in accordance with a quality assurance/quality control plan established pursuant to Env-Sw 805.16;

(4) Layer 4 shall:

- a. Provide for the removal of water which infiltrates through the topsoil layer, or layer 5;
- b. Protect layer 3 from penetration or other damage, including frost and desiccation;
- c. Consist of:
 1. At least 18 inches of free-draining sand which has a saturated hydraulic conductivity of no less than 1×10^{-3} cm/sec, will pass on a weight basis no more than 10% through the number 200 sieve and contains no more than 15% calcium carbonate; or
 2. Geonet and no less than 12 inches of drainage sand, specified based on the results of a hydraulic calculation supporting the design and containing no more than 15% calcium carbonate;
- d. Be constructed in accordance with a quality assurance/quality control plan established pursuant to Env-Sw 805.16; and
- e. Terminate in a drainage system at the toe of the slope of the cap that is designed to readily remove water transmitted by layer 4; and

(5) Layer 5 shall:

- a. Serve to stabilize the capping system against the forces of wind and water erosion;
- b. Provide a low-maintenance surface;
- c. Promote evapotranspiration, meaning loss of water from the soil by both evaporation and transpiration from plants growing thereon;
- d. Provide ease of visual inspection of the capping system surface; and

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e. Consist of no less than 4 inches of topsoil, which is fertilized and vegetated.

(f) Alternative or supplemental materials to the topsoil specified in (e)(5) above shall be used if determined necessary by the permittee and agreed to by the department on the basis of actual site features and conditions, to achieve the required stability or erosion control.

(g) Low permeable capping systems, formerly referred to by the department as “extended interim closure,” shall be comprised of the following layers, at a minimum, from the top of the waste to the top of the cap:

(1) Layer one shall conform to the requirements for layer one for impermeable capping systems as specified in (e)(1) above;

(2) Layer 2 shall:

- a. Serve to isolate wastes from the environment and to protect public health;
- b. Reduce the infiltration of water into underlying wastes;
- c. Consist of no less than 18 inches of soil with a saturated hydraulic conductivity not greater than 1×10^{-5} cm/sec; and
- d. Be constructed in accordance with a quality assurance/quality control plan pursuant to Env-Sw 805.16; and

(3) Layer 3 shall conform to the requirements for layer 5 for impermeable capping systems as specified in (e)(5) above.

(h) Landfill capping systems shall be designed to manage properly stormwater resulting from the 25-year/24-hour storm event and incorporate at least one of the following:

(1) Intermittent swales on the side slopes of the capping system, placed at an interval of 20 vertical feet or minimum spacing of 100 feet as measured from the center line of the swales, with a minimum slope of 2 percent to allow for settlement; or

(2) An erosion-resistant moisture retention layer, placed directly under the vegetated layer, designed to sustain vegetative growth and effectively resist gully erosion.

(i) Stability calculations for the landfill capping system shall be submitted by the applicant to support the proposed design.

(j) Excluding the drainage swales noted in (h)(1) above, landfill capping systems shall be designed at a slope of 5% or greater, as necessary to accommodate the anticipated effects of settlement and consolidation and assure positive drainage and stability of the capping system during the post-closure period.

(k) The landfill capping system shall:

(1) Extend beyond the confirmed limits of landfilled waste and the underlying liner systems; and

(2) Terminate or be anchored in a manner which:

- a. Stabilizes the capping system against creep, pull-out and material failure due to excessive stress;
- b. Limits erosion or wash-out at the toe-of-landfill slope(s); and
- c. Limits, to the extent practicable, surface water from infiltrating into the waste.

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(l) The landfill capping system and the post-closure period stormwater management system shall be compatible in design. Hydraulic calculations to support the proposed design shall be provided, including calculations to demonstrate that the drainage media shall function as intended in the design.

(m) Unless the facility only receives inert waste such as concrete debris, the landfill capping system shall incorporate a methane gas management system meeting the performance criteria of Env-Sw 806.07.

(n) Landfill capping systems shall be designed to support such loading as might occur during and following construction, including activities anticipated to occur during post-closure inspections, monitoring and maintenance, such as maintenance vehicles driving over the cap.

(o) On-the-ground markers or other type of control points shall be placed at the facility site to allow facility inspectors to readily identify and locate the limits of the capping system.

(p) Except in areas where berms, swales, or other structures are constructed to control storm water, the average slope of capping systems shall not exceed 2.5 horizontal to 1 vertical.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2505.10); ss by #10597, eff 7-1-14

Env-Sw 805.11 Other Landfill Design Requirements.

(a) The sequencing of facility development shall be planned based on subdividing the footprint into areas separated by berms.

(b) The subdivisions of a footprint shall be referred to as phases, stages and cells, each term being used as defined in Env-Sw 102-104.

(c) A facility shall be comprised of one or more phases, within which may exist one or more stages, within which may exist one or more cells, depending on the size of the facility and the design of the leachate management system.

(d) The layout and the configuration of, and the sequence for developing the phases, stages and cells shall, by design:

(1) Limit leachate generation by controlling the amount of area open to active operation and otherwise placing waste in a controlled manner consistent with the requirements in Env-Sw 806.02;

(2) Limit the length of time unused cells remain inactive; and

(3) Avoid the need to decommission groundwater monitoring wells as facility development proceeds and new stages or phases are constructed.

(e) Fill sequencing plans shall be prepared as part of the facility operating plan to show clearly the sequencing of facility development.

(f) Fill sequencing plans shall:

(1) Show elevations and placements of lifts, as well as general access points;

(2) Be compatible with the facility's leachate management system design capabilities and limitations;

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(3) Be compatible with the facility's stormwater management system design capabilities and limitations;

(4) Be compatible with the facility closure design; and

(5) Provide information and detail sufficient to allow a facility operator to operate the landfill in accordance with the approved design.

(g) Main access roads within the property boundary of a landfill leading to and from the working face of the landfill shall be designed and maintained to support the required loading, as well as limit to the extent practicable traffic congestion, road safety hazards and dust production.

(h) Main access roads onto or into property shall be fenced if necessary to catch blowing paper.

(i) Landscaping features shall be incorporated in conformance with Env-Sw 1103.04.

(j) Final grades at the facility shall be designed to blend with surrounding features to the greatest extent practicable.

(k) Perimeter and interior berms shall be analyzed for stability.

(l) The vegetated buffer zone required by Env-Sw 804.04(c) shall be:

(1) Established and maintained to minimize impacts to abutting properties; and

(2) Designed to minimize the impact of ingress and egress access roads on abutting properties.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2505.11); ss by #10597, eff 7-1-14

Env-Sw 805.12 MSW Landfill Design Standards.

(a) Landfills receiving municipal solid waste (MSW) shall be designed as double-lined facilities pursuant to Env-Sw 805.05.

(b) Landfills receiving MSW shall be designed to provide the capability to operate in a manner that promotes rapid biological stabilization of landfilled wastes, as by leachate recirculation or bioreactor technologies, or both.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2505.12); ss by #10597, eff 7-1-14

Env-Sw 805.13 MSW Incinerator Ash Landfill Design Standards. Landfills receiving MSW incinerator ash shall be double-lined facilities pursuant to the requirements of Env-Sw 805.05.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2505.13); ss by #10597, eff 7-1-14

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Env-Sw 805.14 Construction/Demolition Debris Landfill and Coal Ash Landfill Design Standards.

(a) Except as provided by Env-Sw 805.15 and subject to (b) below, landfills receiving construction and demolition debris only or coal ash only may be designed as single-lined facilities pursuant to the requirements of Env-Sw 805.05.

(b) If, based on an evaluation of the facility's proposed operating plan and identification of the specific type or source of the wastes, the characteristics of the wastes cannot be consistently determined or assured or the characteristics pose a threat to groundwater quality, the facility shall be a double-lined facility.

(c) Design features shall include the means to control and extinguish fires which might occur within the landfill and to otherwise limit the potential for liner damage due to fire.

(d) Landfills which co-mingle construction and demolition debris with other waste types shall meet the design requirements set forth in this part relative to the other waste types, if the latter are more stringent than the requirements set forth in (a) above.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2505.14); ss by #10597, eff 7-1-14

Env-Sw 805.15 Design Standards for Landfills Receiving Other Solid Waste Types.

(a) Landfills for any waste type(s) not specifically identified in Env-Sw 805.12 through Env-Sw 805.14 shall be designed as double lined facilities, except as provided by (b) below and subject to the landfilling prohibitions in Env-Sw 806.12.

(b) Landfills which receive only stumps and brush or only asbestos or only inert demolition debris, as assured through the provisions of the facility's operating plan, may be designed as unlined landfills pursuant to Env-Sw 805.02(b).

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2505.15); ss by #10597, eff 7-1-14

Env-Sw 805.16 Quality Assurance/Quality Control (QA/QC) Standards for Liner and Capping Systems.

(a) Liners and capping systems shall be tested and placed in strict accordance with a quality assurance/quality control (QA/QC) plan developed in accordance with this part and approved by the department as part of the construction contract documents provided pursuant to the provisions for a type II permit modification in Env-Sw 315.

(b) The QA/QC plan for the soil components within a leachate collection system and within a leak detection system, and the soil drainage and gas migration layers within a capping system shall, at a minimum, specify criteria for acceptance based on the following tests:

- (1) Grain size distribution pursuant to ASTM D422-63 (2007) for:
 - a. Every 3,000 cubic yards of unprocessed sand; or
 - b. Every 10,000 cubic yards of sand which has been processed to meet the project specifications;

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- (2) Hydraulic conductivity pursuant to ASTM D2434-68 (2006) for each new source of sand material except for the gas migration layer(s); and
 - (3) Calcium carbonate content pursuant to ASTM D4373-02(2007) for each new source of sand material except for the gas migration layer.
- (c) The QA/QC plan for soil liners and caps shall, at a minimum, specify:
- (1) Compaction test method pursuant to ASTM D698-12 or ASTM D1557-12 and testing frequency for liner or cap material;
 - (2) Permeability test method pursuant to ASTM D5084-10 and testing frequency for liner or cap material;
 - (3) In place sampling method pursuant to ASTM D1587-08(2012)e1 and permeability testing frequency of the constructed liner or cap;
 - (4) Criteria for acceptance of liner or cap; and
 - (5) Provisions for correcting the installation of off-specification materials.
- (d) Geomembranes used as materials for the capping and lining of a landfill shall be manufactured, handled, deployed, seamed and inspected in accordance with a QA/QC plan as follows:
- (1) The QA/QC plan shall require:
 - a. The project engineer pursuant to Env-Sw 1104.06 or his/her designee to verify the quality of the geomembrane material and all phases of geomembrane construction; and
 - b. The project engineer or his/her designee to be present on site at all times during handling, deployment, seaming, testing and covering of any geomembrane liner or cap and have the authority to order testing and to reject any materials or constructed systems which might affect the liner's or cap's performance for any reason;
 - (2) The QA/QC plan shall:
 - a. State clearly the minimum qualifications of the project engineer and his/her designee, if any;
 - b. Outline the specific duties of the project engineer or his/her designee with respect to the QA/QC plan; and
 - c. Require the project engineer to provide QA reports as specified in Env-Sw 1104.04;
 - (3) The QA/QC plan shall contain manufacturer's quality assurance requirements to assure that geomembranes used for landfill liners or caps shall be of a consistent quality and meet the project specifications;
 - (4) The QA/QC plan, at a minimum, shall:
 - a. State the type of geomembrane and the minimum requirements of raw material quality and formulation; and
 - b. Identify the minimum acceptance standards for manufactured geomembrane sheets, including overall sheet quality, a list of acceptable index properties and quality of factory seams;

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- (5) The QA/QC plan shall reference the appropriate standard tests, such as ASTM or Geosynthetics Research Institute (GRI), to verify that the requirements cited in (4) above have been met;
- (6) To assure that geomembrane material shall not be damaged from the time it leaves the factory to the time it is finally covered, the QA/QC plan shall address the following:
- a. Requirements for shipping, handling and site storage to assure that the material shall be protected from damage and sunlight;
 - b. Minimum quality standards for the subgrade upon which the geomembrane will rest;
 - c. Provisions for the project engineer or his/her designee to inspect the subgrade prior to placement of any geomembrane and, pursuant to Env-Sw 1104.04, certify that the subgrade has been installed in accordance with contract documents;
 - d. Standards for the placement of geomembrane material which address, at a minimum, placement methods, unfavorable weather conditions, excessive heat or cold, and wind; and
 - e. The upper limit on the amount of patching any geomembrane panel can receive;
- (7) The QA/QC plan shall contain minimum requirements for seam quality and specific remedies for when the minimum requirements are not met;
- (8) The QA/QC plan, at a minimum, shall:
- a. Verify the competence of seaming and welding equipment and personnel prior to seaming and welding;
 - b. State the frequency at which testing shall occur and the testing protocol to be met;
 - c. Require the project engineer or his/her designee to have authority to reject any equipment or personnel not passing the tests specified by the QA/QC plan;
 - d. Specify testing for seam strength at a specified interval and criteria for pass/fail; and
 - e. Specify testing for seam continuity;
- (9) The QA/QC plan shall reference the appropriate standard tests, such as ASTM or GRI, to verify that the requirements cited in (8) above have been met;
- (10) The QA/QC plan shall contain provisions for protecting the geomembrane during covering and backfilling; and
- (11) The QA/QC plan shall be:
- a. Part of the specifications for the contract documents prepared and submitted to the department for construction approval, pursuant to Env-Sw 1104 and the provisions for a type II permit modification in Env-Sw 315; and
 - b. Be approved by the department as a condition of any construction approval granted.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2505.16); ss by #10597, eff 7-1-14

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Env-Sw 805.17 Vertical Expansion of Landfills.

- (a) No permit shall be granted for vertical expansion of a landfill, as defined in Env-Sw 104.61 unless:
- (1) The existing landfill is equipped with a double liner system meeting the requirements of Env-Sw 805.05; or
 - (2) The vertical expansion incorporates a double liner system meeting the requirements of Env-Sw 805.05 over the existing landfill.
- (b) All mechanically-stabilized earth berms used to retain waste within the vertical expansion of a landfill shall be:
- (1) Designed with a static factor of safety of at least 1.5 against overturning and sliding;
 - (2) Constructed on a stable foundation as demonstrated by calculations and geotechnical investigation; and
 - (3) Separated from stored waste by a double liner system meeting the requirements of Env-Sw 805.05.

Source. #10597, eff 7-1-14

PART Env-Sw 806 OPERATING REQUIREMENTS

Env-Sw 806.01 Applicability.

- (a) The operating requirements in this part shall apply to all landfills, except:
- (1) Existing landfills which ceased operating prior to October 29, 1997 and do not resume operations on or after October 29, 1997;
 - (2) Permit-exempt landfills identified in Env-Sw 302.03 or Env-Sw 810;
 - (3) Permit-by-notification landfills having an active life of 90 days or less;
 - (4) Research and development permit facilities as provided by Env-Sw 312.02(b); and
 - (5) Emergency permit facilities as provided by Env-Sw 313.02(b).
- (b) The operating requirements in this part shall apply as the complement of operating requirements in Env-Sw 1005 for all facilities, Env-Sw 1105 for facilities having an active life longer than 90 days, Env-Sw 1204 for permit-by-notification facilities and, depending on the type of waste managed, Env-Sw 900.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2506.01); ss by #10597, eff 7-1-14

Env-Sw 806.02 Waste Placement.

- (a) As part of the facility operating plan, a fill sequencing plan shall be developed in accordance with Env-Sw 805.11 and implemented in accordance with the requirements of this section.
- (b) Wastes shall be placed only within the permitted vertical and lateral limits of the landfill.
- (c) Wastes shall be placed in a controlled manner, in accordance with the fill sequencing plans.

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(d) Fill sequencing plans shall be developed on the basis of limiting the quantity of leachate a facility generates, through grading and covering techniques which maximize the quantity of received precipitation that can be handled as stormwater.

(e) Unloading of waste shall be confined to the smallest practical area.

(f) Exposed waste on the working face of the landfill shall be limited, to reduce precipitation contact with the waste and to allow the area to be covered as required pursuant to Env-Sw 806.03.

(g) All waste shall be evenly spread in shallow lifts and compacted, in accordance with plans and procedures which:

- (1) Assure stability;
- (2) Limit potential future settlement;
- (3) Limit rainfall infiltration; and
- (4) Are consistent with the progressive development of final grades.

(h) The first layer of waste placed above the leachate collection layer shall be a minimum of 4 feet in compacted thickness and be of a select nature containing no large or rigid objects, such as pipes or posts, that might cause damage to the liner system or instability.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2506.02); ss by #10597, eff 7-1-14

Env-Sw 806.03 Landfill Cover During Operations.

(a) An approved cover material shall be applied over all sides and working faces of the landfill in a manner and at a frequency required to achieve the following performance objectives:

- (1) Minimize the dispersal of offensive odors;
- (2) Minimize the potential to attract and harbor vectors;
- (3) Control drainage in accordance with Env-Sw 805.06, Env-Sw 805.09, Env-Sw 806.05, and Env-Sw 806.06;
- (4) Control unsightly conditions and windblown waste;
- (5) Reduce the potential for fire;
- (6) Provide stability; and
- (7) Assist in the proper development of final grades, as set forth in the facility's approved fill sequencing plans.

(b) A material shall not be approved or used as cover material unless:

- (1) The material exhibits characteristics required to achieve the performance objectives in (a) above;
- (2) Use of the material will not:
 - a. Cause equipment or operational problems;

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- b. Contribute to the deterioration of leachate quality at lined landfills;
- c. Cause groundwater contamination at unlined landfills; or
- d. Pose a hazard to human health through skin contact or respiration; and

(3) The material itself:

- a. Is not a hazardous waste;
- b. Is physically and chemically consistent in nature; and
- c. Contains no free liquids.

(c) At landfills receiving MSW, cover material shall be placed over all exposed waste no less frequently than at the end of each operating day.

(d) Subject to the requirements in (b) above, the following materials shall be approved as working face cover material:

(1) Natural soils; and

(2) The following alternate materials, provided that use of the material is approved as part of the facility operating plan or approved as a type III permit modification pursuant to Env-Sw 315:

- a. Geosynthetic tarps;
- b. Casting sands;
- c. A waste certified for distribution and use as landfill cover pursuant to the provisions of Env-Sw 1500; and
- d. Contaminated soil, subject to the requirements of Env-Sw 903.05.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; ss by #6894-B, eff 12-1-98; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2506.03); ss by #10597, eff 7-1-14

Env-Sw 806.04 Operating Standards for Groundwater and Surface Water Monitoring. A water quality monitoring program shall be implemented at all landfills, if required pursuant to the provisions of RSA 485-C.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2506.04); ss by #10597, eff 7-1-14

Env-Sw 806.05 Leachate Management Requirements.

(a) Leachate generated at a lined landfill shall be managed either:

(1) By collecting and removing it from the liner system(s) to an approved treatment or disposal facility as described in (b) through (e), below; or

(2) Pursuant to an approval to use an innovative alternative leachate management system as described in (f) through (l), below.

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(b) As part of a facility's operating plan, a leachate management plan shall be developed and implemented at all lined landfills, based on the following criteria:

(1) Routine facility operations, including operations during the 25-year storm event, shall not result in more than one foot of hydraulic head on the liner system(s);

(2) The quantity of leachate generated at the facility shall be limited to the extent possible, by properly planning the sequenced development of the facility, properly managing stormwater infiltration and inflow, minimizing the active area of the landfill and applying cover in accordance with Env-Sw 806.03;

(3) No less than 2 locations for leachate treatment or disposal shall be available by written agreement to manage the quantity of leachate generated by the facility during its active life, except as provided in (4) below;

(4) Facilities that are directly connected to permitted wastewater treatment facility need only to provide one location for leachate management, other than the treatment facility;

(5) The recirculation of leachate shall be prohibited at ash monofills;

(6) At MSW landfills, leachate recirculation shall be allowed if approved by the department subject to (7) below, as part of the facility's operating plan prepared pursuant to Env-Sw 1105; and

(7) The practice of leachate recirculation shall:

a. Not adversely affect the quality of the leachate so as to preclude its acceptance at waste water treatment facilities listed in the leachate management plan;

b. Not cause the facility to operate in excess of 12 inches of hydraulic head on the liner under routine operations including the 25-year storm event;

c. Not result in a loss of structural stability;

d. Not be adversely affected by weather conditions, such as freezing temperatures or periods of heavy rainfall; and

e. Provide a benefit to facility operations, exclusive of any short or long-term economic benefit which may be associated with postponing leachate collection and removal.

(c) Storage capacity shall be required to contain the leachate generated by the precipitation from the 100-year storm event in accordance with Env-Sw 805.06.

(d) A pumping and removal schedule shall be incorporated into facility operations to assure the availability of storage capacity.

(e) Regularly-scheduled inspections and routine maintenance of the leachate collection and removal systems shall be established as part of the facility's operating plan to limit clogging of the systems and to otherwise assure the functional integrity of the systems.

(f) The permittee of a landfill having a leachate collection system designed and constructed to maintain less than a 30-cm depth of leachate on the liner may apply for approval to use innovative alternative leachate management methods which vary from the requirements of (a) through (e), above, and the run-on control systems in 40 CFR 258.26(a)(1), July 1, 2009, or the liquids restrictions in 40 CFR 258.28(a), July 1, 2009, or both.

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(g) Prior to implementing any innovative alternative leachate management method, the permittee shall apply for a type I-B permit modification as specified in Env-Sw 315.05.

(h) The department shall not approve an application for an innovative alternative leachate management method unless the permittee demonstrates that the innovative alternative method will not cause contamination of groundwater or surface water, or cause leachate depth on the liner to exceed 30 cm.

(i) Any permit modification issued pursuant to (h), above, shall include such terms and conditions as are necessary to ensure that the innovative alternative leachate management method is at least as protective as the leachate management methods otherwise required by (a) through (e), above, including but not limited to conditions relating to monitoring and testing the efficacy and performance capabilities of the innovative alternative technology or process and reporting on the efficacy and performance capabilities of the innovative alternative method.

(j) A permit modification issued pursuant to (h), above, shall be valid for 3 years, subject to the following:

(1) The permittee shall maintain compliance with all terms and conditions of the permit, the Solid Waste Rules, and 40 CFR 258.4, July 1, 2009;

(2) If such compliance is not maintained, the permit modification shall be terminated or other corrective measures shall be ordered, in accordance with 40 CFR 258.4(d), July 1, 2009;

(3) If the permittee wishes to continue using the innovative alternative method beyond the term of the permit modification, the permittee shall apply for renewal at least 90 days prior to the expiration of the modification by submitting a written renewal application and a report, including supporting data, which documents the efficacy and performance capabilities of the innovative alternative method; and

(4) The department shall renew the modification to allow continued use of the innovative alternative method if:

a. The permittee demonstrates that the innovative alternative method is effective in preventing contamination of groundwater or surface water and that leachate depth on the liner has not exceeded 30 cm; and

b. The permittee is in compliance with all terms and conditions of the permit, the Solid Waste Rules, and 40 CFR 258.4, July 1, 2009.

(k) A renewal under (j), above, shall be valid for 3 years, provided however that the total term for an innovative alternative method including renewals shall not exceed 12 years.

(l) The limitations in 40 CFR 258.4(f), July 1, 2009, relative to small MSWLF units shall apply.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2506.05); amd by #9695, eff 4-22-10; ss by #10597, eff 7-1-14

Env-Sw 806.06 Stormwater Management Requirements. The permittee shall grade the site to redirect run-on and run-off away from the active face of the landfill, reduce the amount of leachate generated, and reduce the potential for erosion, in accordance with Env-Sw 805.09.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97;

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(See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2506.06); ss by #10597, eff 7-1-14

Env-Sw 806.07 Decomposition Gas Control Requirements.

- (a) Decomposition gases shall be controlled to prevent hazards to health, safety or property.
- (b) Facility operations shall not cause the concentration of methane and other explosive gases to:
 - (1) Exceed 25 percent of the lower explosive limit for gases in structures on or off-site, excluding leachate collection and gas control and recovery components; and
 - (2) Exceed 50 percent of the lower explosive limit for the gases at and beyond the property boundary within the soil.
- (c) To assure that the requirements in (a) above are met, a monitoring program shall be implemented by the permittee in accordance with provisions in the facility's approved operating plan and closure plan.
- (d) The type and frequency of monitoring shall be based on the following factors:
 - (1) Soil conditions;
 - (2) The hydrogeological and hydraulic conditions surrounding the disposal area; and
 - (3) The location of any man-made structures and property boundaries.
- (e) If methane or other explosive gases are detected above the limits specified in (b) above, the permittee shall notify the department immediately and implement contingency procedures to ensure the protection of public health and safety.
- (f) A decomposition gas program shall be implemented by the permittee under the provisions of the facility's approved operating plan and closure plan to assure that the facility complies with the federal clean air act and state air quality standards.
- (g) A written plan for confined space entry, based on the standards specified by Federal Occupational, Safety and Health Administration (OSHA) requirements in 29 CFR 1910.146, shall be prepared and implemented as part of facility operations.
- (h) For landfills with active gas extraction systems, the permittee shall maintain authority for complete operational control of any and all gas extraction wells and blower systems, together with at least one mechanism for destroying the gas.
- (i) The permittee may transmit landfill gas collected using an active gas extraction system to other locations for use as fuel, provided the permittee complies with all federal, state, and local requirements that apply to the method by which the gas is transmitted.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2506.07); ss by #10597, eff 7-1-14

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Env-Sw 806.08 Inspections, Maintenance, Monitoring and Reporting Requirements.

(a) This section establishes requirements, in addition to those requirements specified in Env-Sw 1000 and Env-Sw 1100, for inspecting, maintaining and monitoring landfills which have not undergone closure pursuant to an approved closure plan, and specifies the reporting requirements related thereto.

(b) Unless otherwise specified, the word “daily” as used in this section shall mean on each operating day.

(c) The permittee shall regularly inspect and maintain all facility components, including:

- (1) Roads;
- (2) Berms;
- (3) Active and inactive filling areas;
- (4) Pipes;
- (5) Vaults;
- (6) Valves;
- (7) Tanks;
- (8) Ponds;
- (9) Equipment;
- (10) Temporary, intermediate and final cover;
- (11) Groundwater monitoring wells; and
- (12) Gas management devices.

(d) Leachate management systems shall be monitored, and the data recorded in the facility operating records, as follows:

- (1) The hydraulic head elevation on the liner shall be measured at the low point of a cell, phase or stage where leachate is collected, and recorded:
 - a. At least once per month;
 - b. After each storm event greater than or equal to the 2-year/24-hour storm; and
 - c. If the hydraulic head is found to be 12 inches or greater, daily until the hydraulic head is less than 12 inches;
- (2) The quantity of leachate collected off the liner systems and transported off-site or treated shall be measured daily, and the destination recorded;
- (3) Flow in the secondary leachate collection system(s), shall be measured and recorded:
 - a. At least once per week; and
 - b. More frequently when required to complete an investigation pursuant to (k) below;
- (4) The average flow in the secondary leachate collection system(s) occurring during the 30-day operating period preceding the last measurement shall be calculated, recorded and, when required pursuant to (k) below, reported;

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(5) Analytical characteristics, based on representative samples taken from the primary leachate collection system in April, July and November, shall be determined for the following parameters:

- a. pH;
- b. Temperature;
- c. Chemical oxygen demand (COD);
- d. Specific conductance;
- e. Iron;
- f. Manganese;
- g. Sulfates;
- h. Chlorides;
- i. Chromium;
- j. Lead;
- k. Cadmium; and
- l. Except for ash landfills, volatile organic compounds (VOCs); and

(6) The liquid level in the leachate storage tanks shall be measured on a daily basis at facilities not connected to a wastewater treatment facility and on a weekly basis at facilities connected to a wastewater treatment facility.

(e) Landfill gas concentrations shall be measured no less than quarterly and in accordance with Env-Sw 806.07.

(f) Groundwater and surface water quality monitoring systems shall be monitored and the data reported as required pursuant to RSA 485-A or RSA 485-C, as applicable.

(g) Facilities shall file quarterly and annual reports in accordance with Env-Sw 303, according to the following schedule:

- (1) Quarterly reports shall be filed no later than 30 days following the end of the quarterly reporting period; and
- (2) Annual reports shall be filed no later than March 31 of the year following the calendar year being reported.

(h) The quarterly report shall include:

- (1) The name and permit number of the reporting facility;
- (2) The data specified by (d) and (e) above, excluding leachate analytical data required by (d)(5);
- (3) Quantity and type of waste received by the facility daily, in tons;
- (4) Data units for each type of data reported;
- (5) Reporting period or dates the data was collected, for each type of data reported; and
- (6) Monthly and quarterly subtotals for each type of data reported.

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(i) The leachate analytical data required pursuant to (d)(5), above, shall be filed in accordance with Env-Sw 303, no later than 30 days following receipt of analytical results.

(j) Annual reports shall:

(1) Be prepared as specified by Env-Sw 1105.13 and Env-Sw 1105.14, as applicable; and

(2) Include:

a. A summary of the facility inspection and maintenance activities; and

b. An analysis of remaining capacity based on a site survey which identifies the remaining facility capacity.

(k) The following reporting requirements shall apply to the average secondary leachate collection system flow rates occurring over a 30-day period:

(1) Rates less than or equal to 25 gallons per tributary acre per day shall be reported to the department in accordance with (h) above no less than quarterly;

(2) Rates which exceed 25 gallons per tributary acre per day shall be reported to the department within one week of identifying the rate, except for flow which the department agrees is the result of the dewatering of the drainage layer following construction; and

(3) Except for flow which the department agrees is the result of the dewatering of the drainage layer following construction, rates which exceed 100 gallons per tributary acre per day shall require the permittee to file an investigation report with the department in accordance with Env-Sw 806.09.

(l) Destruction of facility records shall not occur unless approved by the department pursuant to the provisions for a type V permit modification in Env-Sw 315.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; ss by #8459, eff 10-28-05 (formerly Env-Wm 2506.08); ss by #10597, eff 7-1-14

Env-Sw 806.09 Other Operating Standards.

(a) Equipment for spreading, compacting and covering solid wastes under all anticipated weather conditions shall be available and in operating condition at all times.

(b) Auxiliary equipment shall be available as required by the facility's operating plan.

(c) Salvaging of solid waste shall be controlled so as not to interfere with landfill operations and not to harbor vectors or otherwise result in violating the universal facility requirements in Env-Sw 1000.

(d) Salvaging that constitutes landfill reclamation shall be subject to Env-Sw 808.

(e) The permittee shall investigate the occurrence of flow rate in the secondary leachate collection system that exceeds 100-gallons per tributary acre per day and which cannot be reasonably attributed to the dewatering of the drainage layer following construction.

(f) The investigation in (e) above shall be for the purpose of identifying the potential cause(s) and appropriate response actions related thereto, which shall be reported to the department in writing in the form of a proposed response action plan.

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(g) The permittee shall implement the approved response action plan to include any of the following actions deemed necessary on the basis of the likely cause and remedy of the problem:

- (1) Increasing monitoring and reporting;
- (2) Instituting operational changes to limit hydraulic head on the overlying liner;
- (3) Locating and repairing leak(s);
- (4) Retrofitting the overlying liner; or
- (5) Closing part or all of the facility if necessary to protect human health and environment.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2506.09); ss by #10597, eff 7-1-14

Env-Sw 806.10 Construction/Demolition Debris Landfill Operating Requirements. Landfills receiving construction and demolition debris shall comply with the operating standards set forth in this part and in Env-Sw 805.14.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2506.10); ss by #10597, eff 7-1-14

Env-Sw 806.11 Asbestos Waste Landfill Operating Requirements. Landfills receiving asbestos shall operate in compliance with Env-Sw 901, this part and Env-Sw 805.15.

Source. #5172, eff 7-1-91; amd by #5297, eff 12-24-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2506.11); ss by #10597, eff 7-1-14

Env-Sw 806.12 Prohibitions. The following wastes shall not be landfilled:

- (a) Untreated infectious waste;
- (b) Contained gaseous waste;
- (c) Liquid wastes
- (d) Wet cell batteries, pursuant to RSA 149-M:27, II;
- (e) Leaf or yard waste, except as provided in RSA 149-M:27, III;
- (f) Video display devices, central processing units from computers, or non-mobile video display media recorders or players, pursuant to RSA 149-M:27, IV;
- (g) Mercuric oxide batteries, pursuant to RSA 149-M:28, IV; and
- (h) Mercury-added products, pursuant to RSA 149-M:58, I.

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Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2506.12); ss by #10597, eff 7-1-14

PART Env-Sw 807 CLOSURE REQUIREMENTS

Env-Sw 807.01 Applicability.

(a) The rules in this part shall apply to closure of all landfills, except:

- (1) Facilities that have closed in accordance with a department-approved closure plan and have achieved the performance standards in Env-Sw 807.04;
- (2) Permit-exempt facilities, operated and closed in compliance with the exemption;
- (3) Permit-by-notification facilities having an active life of 90 days or less, which have operated and closed in compliance with the permit-by-notification;
- (4) Research and development permit facilities as provided by Env-Sw 312.02(b); and
- (5) Emergency permit facilities as provided by Env-Sw 313.02(b).

(b) The closure requirements in this part shall apply as the complement of the closure requirements in Env-Sw 1006 for all facilities, Env-Sw 1106 for facilities having an active life longer than 90 consecutive days and, depending on the type of waste managed, Env-Sw 900.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2507.01); ss by #10597, eff 7-1-14

Env-Sw 807.02 Closure Scheduling.

(a) Except as noted in (b) below, a landfill which has operated in compliance with its permit shall be subject to closure on a schedule specified in the permit based on the facility capacity and life expectancy.

(b) A landfill which holds a temporary permit shall be subject to closure on a schedule determined pursuant to Env-Sw 307.

(c) Other circumstances which shall provide cause for closure shall be as specified in Env-Sw 1006.01.

Source. #5172, eff 7-1-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; amd by #6894-B, eff 12-1-98; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2507.02); ss by #10597, eff 7-1-14

Env-Sw 807.03 Landfill Closure and Post-Closure Requirements.

(a) Landfills shall be closed in accordance with an approved closure plan pursuant to Env-Sw 1106.

(b) Subject to (c), below, landfill closure and post-closure activities shall involve all activities required at a facility to achieve the performance standards in Env-Sw 807.04, including:

- (1) Terminating active use of the facility;

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(2) At unlined landfills, investigating the extent of waste to groundwater contact zones, if any, and if required under RSA 485-C:

- a. Removing the waste out of groundwater; or
- b. Lowering the groundwater table;

(3) Consolidating landfilled waste within the permitted footprint, grading slopes and otherwise configuring the facility for acceptance of a capping system that meets the requirements of Env-Sw 805.10;

(4) Constructing and maintaining a capping system at the facility which meets the standards set forth in Env-Sw 805.10;

(5) Constructing, operating and maintaining a stormwater management system for the capped facility and site in accordance with the standards set forth in Env-Sw 805.09 and Env-Sw 806.06;

(6) Operating and maintaining the facility's leachate management system in accordance with Env-Sw 806.05 and in accordance with a schedule specified in the approved post-closure monitoring and maintenance plan;

(7) Operating, maintaining and monitoring the facility's leak detection system(s) in accordance with the provisions of the approved post-closure monitoring and maintenance plan;

(8) Constructing, operating and maintaining the facility's groundwater and surface water monitoring system and implementing the facility's approved post-closure groundwater and surface water monitoring program in accordance with RSA 485-C;

(9) Constructing, operating, and maintaining the facility's decomposition gas control system as applicable, in accordance with Env-Sw 806.07;

(10) Monitoring settlement, both by visual inspection and by using established control points, and making related repairs to the facility as needed including the repair of areas where settlement exceeds the capping system's design tolerances and the repair of areas where settlement results in the loss of positive drainage;

(11) Providing control of access to the facility in accordance with Env-Sw 1104 and to facilitate compliance with the performance standards provided in Env-Sw 807.04 and to otherwise limit threats to public health, safety and the environment;

(12) Providing financial assurance for the cost of post-closure monitoring, in accordance with Env-Sw 1400;

(13) Meeting all requirements in Env-Sw 807.05 and filing all reports with the department in accordance with Env-Sw 1105.14; and

(14) Undertaking any other activities, including remedial activities, as necessary to achieve compliance with Env-Sw 807.04.

(c) Maintaining a closed landfill or any component thereof shall include all inspection, monitoring and repair work required to satisfy the performance standards in Env-Sw 807.04 and the reporting requirements in Env-Sw 807.05.

(d) For landfills existing prior to October 29, 1997 and located on property not owned by the permittee, the permittee shall obtain legal rights of access to the property prior to facility closure for the purpose of meeting all required closure and post-closure obligations at the facility in accordance with the solid waste rules. Such legal rights of access shall be for a period of time not less than 99 years.

Source. #5172, eff 7-1-91; amd by #5297, eff 12-24-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2507.03); ss by #10597, eff 7-1-14

Env-Sw 807.04 Performance Standards. The permittee shall implement an approved closure plan requiring that:

- (a) The facility and site effectively cease generating leachate;
- (b) The facility and site effectively cease generating decomposition gases;
- (c) The facility and site achieve maximum settlement, with the capping system intact and no reasonable expectation that integrity of the capping system will be at risk without regular maintenance;
- (d) The facility and site have no adverse impact to air, groundwater or surface water; and
- (e) The facility and site not otherwise pose a risk to human health or the environment.

Source. #5172, eff 7-1-91; amd by #5297, eff 12-24-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2507.04); ss by #10597, eff 7-1-14

Env-Sw 807.05 Post-Closure Inspections, Monitoring, Maintenance and Reporting Requirements.

(a) The post-closure period of a landfill shall be the period of time required to demonstrate the facility has achieved the performance standards specified in Env-Sw 807.04.

(b) During the post-closure period, the permittee shall have specific obligations to regularly inspect, monitor and maintain the facility in conformance with the solid waste rules based on the provisions of a post-closure inspection, monitoring and maintenance plan approved by the department in the permit pursuant to (e) below.

(c) Subject to (d) below, for the purposes of determining financial assurance requirements, the post-closure period for landfills shall be 30 years from the date the complete capping system is installed or the date of the last most recent estimate obtained by the permittee as required by Env-Sw 1405.02, whichever is later.

(d) The post-closure period shall be subject to periodic adjustment by implementing the permit modification procedures in Env-Sw 306 and Env-Sw 315 as follows:

- (1) In the event that post-closure monitoring data or other available information provides an indication that the required performance standards are unlikely to be achieved during the approved post-closure monitoring period:
 - a. The permittee shall identify the cause in a report to the department; and
 - b. Depending on the cause, the department shall adjust the post-closure monitoring period or require the permittee to implement remedial closure or post-closure work, pursuant to the permit modification procedures in Env-Sw 306; or

(2) In the event the permittee believes that post-closure monitoring data and other available information provides sufficient evidence that the required performance standards are achieved at

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the facility, the permittee may submit an application for permit modification pursuant to Env-Sw 315 to request an appropriate reduction in the post-closure period for the facility.

(e) A detailed post-closure inspection, monitoring and maintenance plan shall be developed and implemented by the permittee to assure compliance with Env-Sw 807.03, Env-Sw 807.04, and this section. The plan shall be a condition of the facility's permit when approved by the department.

(f) All facility systems shall be thoroughly inspected on a schedule that is initially the same as required of operating facilities in Env-Sw 806.08.

(g) The permittee may request a decrease in the frequency of inspections based on a favorable comparison of the performance expectations and actual performance but in no case shall inspections occur less than semi-annually.

(h) Copies of the inspection reports shall be filed in accordance with Env-Sw 303 within 30 days of completing the inspection.

(i) Pursuant to Env-Sw 1105.14, the permittee shall file an annual report with the department including an assessment of whether facility is achieving the performance requirements in Env-Sw 807.04.

(j) The permittee shall notify the department in accordance with Env-Sw 1105.07 when facility damage, malfunction or sub-standard performance occurs at the facility.

(k) Following completion of the capping system construction, the permittee shall file record drawings for the closed facility in accordance with Env-Sw 1104.07.

(l) The permittee shall attach notification to the property deed that a landfill exists on the property and cause the notification to be recorded at the registry of deeds in the county where the property is located.

(m) Proof of notification filing pursuant to (l) above shall be provided to the department by the permittee with the submission of record drawings pursuant to (k) above.

(n) Notification pursuant to (l) shall include the following information:

- (1) A statement that a landfill exists on this property;
- (2) Identification of the registry of deeds, book and page numbers where title to the property is recorded;
- (3) Identification of the property tax map and lot numbers as identified by the political subdivision in which the facility is located;
- (4) U.S. Geological Survey (USGS) coordinates for the landfill site;
- (5) Description of the facility, including size, type of wastes received, type of liner if any and type of cap;
- (6) Description of closure implemented and identification of the permit issued by the department under which closure occurred, including a statement that the permit might contain certain legal obligations regarding the site;
- (7) A statement that post-closure use of the property shall not disturb the integrity of the final cover, liners, or any other components of the containment systems or the function of the monitoring systems unless approved by the department;
- (8) A statement that any future change in use shall be subject to review and approval by the department pursuant to (o) below; and

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(9) A statement that access shall be assured to department inspection personnel and the permittee for monitoring and maintenance purposes.

(o) The permittee shall obtain department approval, via the permit modification procedures in Env-Sw 315, for any post-closure activity at the site not specifically approved by the facility's permit.

(p) The permittee shall implement such repairs or remedial activities as necessary to assure compliance with the performance standards set forth in Env-Sw 807.04.

Source. #5172, eff 7-1-91; amd by #5297, eff 12-24-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2507.05); ss by #10597, eff 7-1-14

PART Env-Sw 808 LANDFILL RECLAMATION

Env-Sw 808.01 Applicability. The rules in this part shall apply to facilities where landfill reclamation activities occur.

Source. #5172, eff 7-1-91; amd by #5297, eff 12-24-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2508.01); ss by #10597, eff 7-1-14

Env-Sw 808.02 Approval Required.

(a) Landfill reclamation activities shall proceed only in accordance with approval granted in the form of a permit or permit modification.

(b) The information required by this part shall be submitted with the permit application or application for permit modification.

Source. #5172, eff 7-1-91; amd by #5297, eff 12-24-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2508.02); ss by #10597, eff 7-1-14

Env-Sw 808.03 Feasibility Study.

(a) The permittee shall conduct a feasibility study prior to any reclamation activities.

(b) Prior to conducting the feasibility study, a scope-of-work for the study shall be submitted to the department as an application for type I-B permit modification pursuant to Env-Sw 315, including:

- (1) Provisions for a review of existing background data to include:
 - a. Site inspections and personnel interviews;
 - b. Operating history and waste receipt records; and
 - c. Analytical data, engineering records and department records;
- (2) A site plan showing the location of all proposed work areas;
- (3) The proposed number and location of all borings, trenches and test pits;
- (4) A description of all excavation and materials handling operations;

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- (5) A description of all material quantification methods, laboratory analyses and test burns which will be used to characterize and estimate the quantities of recyclables, soils, combustibles and other components;
 - (6) A description of project management responsibilities with a proposed work schedule;
 - (7) A contingency plan as described in Env-Sw 808.05;
 - (8) If the facility is closed, a plan for the repair of any damage done to the capping system; and
 - (9) If the facility is lined, a plan for the protection of all existing landfill components including liners, leachate collection piping, gas recovery systems, storm water systems and other components as applicable.
- (c) The feasibility study field investigation shall not be conducted unless approved by the department as a modification of the permit.
- (d) Upon completion of the feasibility study field investigation, the permittee shall submit a report to the department which compiles and interprets the collected data, including the following:
- (1) The results of all sampling and analysis performed on excavated materials;
 - (2) The thickness of solid waste fill including the logs of all test pits and test borings;
 - (3) Information to characterize the composition and relative quantities of excavated materials, including recyclables, combustibles, soils and other components;
 - (4) An evaluation of the suitability of the excavated materials for reuse or recycling, the need for further processing and the expected final disposition;
 - (5) An assessment of potential landfill reclamation costs and potential landfill closure costs;
 - (6) An assessment of the impacts associated with landfill reclamation; and
 - (7) A determination if landfill reclamation is feasible at the facility.

Source. #5172, eff 7-1-91; amd by #5297, eff 12-24-91; ss by #6535, INTERIM, eff 7-1-97, EXPIRES: 10-29-97; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2508.03); ss by #10597, eff 7-1-14

Env-Sw 808.04 Landfill Reclamation Work Plan.

- (a) If landfill reclamation is determined to be feasible in accordance with Env-Sw 808.02, and landfill reclamation is to be undertaken, the permittee shall submit a landfill reclamation work plan to the department.
- (b) The landfill reclamation work plan shall include the following:
- (1) A detailed plan for the management and control of odors, which specifically addresses measures to avoid the dispersion of offensive odors in residential areas and includes provisions for work stoppage in the event planned odor control measures fail;
 - (2) A map showing the location of all inhabited dwellings within 2,000 feet of the reclamation area and the direction of prevailing winds;
 - (3) A site plan which details the proposed reclamation area and delineates in plan and cross-sectional view the depth of excavation, proximity to the liner and leachate collection system, if

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any, other landfill structures and components, and the direction the landfill reclamation will progress;

- (4) A description of the excavation and sorting procedures for all removed materials;
- (5) A contingency plan in accordance with Env-Sw 808.05;
- (6) A description of all procedures, including quality assurance and quality control provisions, for processing, testing, storage, removal, transfer, use and disposal of excavated waste;
- (7) A storm water management and leachate management plan; and
- (8) The procedure for site clean-up and grading after the reclamation with detailed drawings depicting original and final grades.

Source. #5172, eff 7-1-91; ss by #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2508.04); ss by #10597, eff 7-1-14

Env-Sw 808.05 Contingency Plan.

(a) A contingency plan shall be submitted as part of any landfill reclamation work plan and feasibility study.

(b) The contingency plan shall include the following:

- (1) A description of actions to be taken with respect to personnel safety, on-site personnel injury, fires, explosions, landfill gases, dust, odor, noise, vectors and excavation and release of hazardous substances or toxic materials;
- (2) Hazard evaluation and protection from potential hazards, including engineering controls, personal protection equipment and air monitoring techniques;
- (3) Designation of exclusion, decontamination and support zones, decontamination procedures, on-site communication procedures, emergency procedures and access control; and
- (4) Designation of a qualified, full-time site health and safety coordinator.

Source. #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2508.05); ss by #10597, eff 7-1-14

PART Env-Sw 809 RESERVED

PART Env-Sw 810 PERMIT-EXEMPT LANDFILLS

Env-Sw 810.01 Purpose. The purpose of the rules in this part is to identify landfills which are permit-exempt, pursuant to Env-Sw 302.03.

Source. #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2510.01); ss by #10597, eff 7-1-14

Env-Sw 810.02 General Exemption Provisions.

(a) The landfills described in this part shall be exempt from obtaining a permit, subject to the requirements in Env-Sw 810.03.

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(b) A permit exemption shall not affect a person's obligation to obtain all requisite federal, state or local permits, licenses or approvals, or to comply with all other applicable federal, state, district or local permits, ordinances, laws or approvals or conditions pertaining to the permit-exempt activities.

Source. #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2510.02); ss by #10597, eff 7-1-14

Env-Sw 810.03 Exemption Conditions. All permit-exempt landfills identified in this part shall comply with the following requirements:

(a) A permit-exempt landfill shall not be located on property that is subject to any ongoing enforcement action by the department, unless approved by the department as part of the enforcement action;

(b) A permit-exempt landfill shall not adversely affect the operation and closure of any existing facility;

(c) The owner of the property on which the facility is located shall be designated as the permittee and subject to all obligations related thereto;

(d) At all times during facility operations, the permittee shall maintain cover materials at the facility site in a sufficient quantity as to comply with the applicable cover requirements;

(e) During the active life of the facility, the permittee shall control access to the facility in a manner as to prevent unlawful dumping;

(f) The permittee shall close the facility in conformance with Env-Sw 1006 as follows:

(1) No less than 2 feet of clean, compacted soil, and more when specified by the rules in this part, shall be placed as final cover over all landfilled waste;

(2) Final cover shall be properly graded, seeded and mulched to produce and sustain vegetative growth, or otherwise stabilized to prevent erosion;

(3) The permittee shall regularly inspect the facility to assure that the cover materials maintain their integrity, that voids and sink holes do not develop, and that the site is otherwise protective of the environment, public health and safety; and

(4) The permittee shall implement repairs or take other remedial action as necessary to achieve and maintain compliance therewith;

(g) The facility shall comply with all other requirements specified in Env-Sw 1000 and, depending on the type of waste managed at the facility, Env-Sw 900; and

(h) All waste managed at the facility shall be actively managed.

Source. #6619-B, eff 10-29-97; amd by #6894-B, eff 12-1-98; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2510.03); ss by #10597, eff 7-1-14

Env-Sw 810.04 On-site Asphalt and Masonry Debris Landfills. Asphalt and masonry debris buried at the waste generation site pursuant to Env-Wm 2510.04 as effective on October 29, 1997 shall not be required to be removed provided that:

(a) The facility buried the following waste types only:

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- (1) Fully cured asphalt, concrete, brick, cement or other inert masonry materials substantially free of protruding reinforcing materials;
- (2) Fully cured asphalt which is not ground or pulverized; or
- (3) A combination thereof;

(b) The buried waste does not include any materials or substances that have the potential to leach contaminants to groundwater or surface water or to emit pollutants to the air, including lead paint, asbestos or chemicals;

(c) The waste was buried in a manner as to preclude the development of sink holes and to otherwise be protective of the environment, public health and safety; and

(d) The waste was buried at least 75 feet from all water supply wells and surface waters and at least 4 feet above the seasonal high water table and bedrock.

Source. #6619-B, eff 10-29-97; ss by #6894-B, eff 12-1-98; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2510.04); ss by #10597, eff 7-1-14

Env-Sw 810.05 Leachfield Repair Residuals Landfills. Subject to Env-Sw 810.03, no permit shall be required to bury waste soil and stone from the repair or replacement of existing leaching fields regulated under Env-Wq 1000, provided that:

- (a) The burial location shall be on the same property as the waste generation site;
- (b) The buried waste shall be placed at least 4 feet above the seasonal high water table and bedrock; and
- (c) The burial location shall meet the minimum separation distances for leach bed trenches required in Env-Wq 1008.

Source. #6619-B, eff 10-29-97; amd by #6894-B, eff 12-1-98; ss by #8459, eff 10-28-05 (formerly Env-Wm 2510.05); ss by #10597, eff 7-1-14

Env-Sw 810.06 Abandoned Underground Structures. Subject to Env-Sw 810.03, no permit shall be required to bury in place existing abandoned underground structures, such as foundation walls, footings, pipes and culverts, provided that:

- (a) The abandoned structure shall not include:
 - (1) Materials or substances that have the potential to leach contaminants to groundwater or surface water or to emit pollutants to the air;
 - (2) Treated wood;
 - (3) Insulation; or
 - (4) General construction and demolition debris;
- (b) The abandoned structure shall not be a structure which is required by other rules or regulations to be removed;
- (c) The structure shall be buried in a manner as to preclude the development of sink holes and to otherwise be protective of the environment, public health and safety; and

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(d) The material used to fill and cover the structure shall not be a waste.

Source. #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2510.06); ss by #10597, eff 7-1-14

Env-Sw 810.07 Incidental Animal Burial. Subject to Env-Sw 810.03, no permit shall be required to bury a deceased animal, provided that:

(a) The person controlling the land where the animal is buried shall agree to the location of the grave site;

(b) The grave shall be covered with a sufficient quantity and depth of soil as to avoid disturbance of the burial site by other animals; and

(c) The grave site shall not constitute a pet cemetery as otherwise regulated under the provisions of Env-Sw 810.08.

Source. #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2510.07); ss by #10597, eff 7-1-14

Env-Sw 810.08 Pet Cemeteries. Subject to Env-Sw 810.03, no permit shall be required to bury animal carcasses not regulated under Env-Sw 904.01(e) and not exempt pursuant to Env-Sw 810.07, provided that:

(a) The location shall be at least 100 feet from any property boundary or surface water, 200 feet from a private or community water supply, and 400 feet from a municipal water supply;

(b) The buried material shall be placed at least 4 feet above the seasonal high water table and bedrock;

(c) The carcasses shall be covered with at least 3 feet of clean fill immediately following placement in the ground; and

(d) Written notification shall be provided to the state veterinarian in instances where 10 or more carcasses are buried.

Source. #6619-B, eff 10-29-97; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2510.08); ss by #10597, eff 7-1-14

Env-Sw 810.09 Off-site Stump Dumps. Subject to Env-Sw 810.03, no permit shall be required to bury stumps and tree parts thereof received from off-site locations, provided that:

(a) The burial site is:

(1) At least 75 feet from any water supply well;

(2) At least 25 feet from any property line; and

(3) At least 4 feet above the seasonal high groundwater table;

(b) The stumps and tree parts thereof are buried in a manner as to preclude the development of sink holes and erosion of cover materials, and to otherwise be protective of the environment, public health and safety; and

(c) A notation is recorded in the chain of title for the property on which the burial site is located, to include the following information:

(1) A statement that the property has been used for the disposal of stumps and tree parts thereof;

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- (2) The date the disposal activity took place;
- (3) The location of the burial area(s), with sufficient specificity as to allow an independent third party to locate the area(s); and
- (4) The estimated quantity of waste disposed on the property.

Source. #7225, eff 3-31-00; (See Revision Note at chapter heading for Env-Sw 800); ss by #8459, eff 10-28-05 (formerly Env-Wm 2510.09); ss by #10597, eff 7-1-14

APPENDIX

Rule Sections	State Statute(s) Implemented	Federal Regulations Implemented
Env-Sw 800 (see also specific sections listed below)	RSA 149-M:6, III; RSA 149-M:7, II, III, V, XIV; RSA 149-M:9	40 CFR 258
Env-Sw 806.05	RSA 149-M:6, III; RSA 149-M:7, II, III, XIV; RSA 149-M:9	40 CFR 258.4
Env-Sw 806.12	RSA 149-M:27,II, III, IV; RSA 149-M:28,IV; RSA 149-M:58, I	