

**CHAPTER 277. CONSTRUCTION/DEMOLITION WASTE LANDFILLS**

<b>Subchap.</b>	<b>Sec.</b>
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**Authority**

The provisions of this Chapter 277 issued under section 105(a) of the Solid Waste Management Act (35 P. S. § 6018.105(a)); sections 5(a), 304 and 402 of The Clean Streams Law (35 P. S. §§ 691.5(a), 691.304 and 691.402); and sections 1905-A, 1917-A and 1920-A of The Administrative Code of 1929 (71 P. S. §§ 510-5, 510-17 and 510-20); amended under the Municipal Waste Planning, Recycling and Waste Reduction Act (53 P. S. §§ 4000.101—4000.1904); the Solid Waste Management Act (35 P. S. §§ 6018.101—6018.1003); The Clean Streams Law (35 P. S. §§ 691.1—691.1001); and sections 1917-A and 1920-A of The Administrative Code of 1929 (71 P. S. §§ 510-17 and 510-20); amended under section 105(a) of the Solid Waste Management Act (35 P. S. § 6018.105(a); sections 5(b) and 402 of The Clean Streams Law (35 P. S. §§ 691.5(b) and 691.402); section 302 of the Municipal Waste Planning, Recycling and Waste Reduction Act (53 P. S. § 4000.302); section 104(a) of the Land Recycling and Environmental Remediation Standards Act (35 P. S. § 6026.104(a)); sections 2(b) and 4(b) of the Infectious and Chemotherapeutic Wastes Law (35 P. S. §§ 6019.2(b) and 6019.4(b)); sections 1905-A, 1917-A, 1920-A and 1937-A of The Administrative Code of 1929 (71 P. S. §§ 510-5, 510-17, 510-20 and 510-37); section 207 of the Small Business and Household Pollution Prevention Program Act (35 P. S. § 6029.207); section 15(a) of the act of November 26, 1997 (P. L. 530, No. 57); Environmental Stewardship and Watershed Protection Act, 27 Pa.C.S. § 6105(g); and sections 301 and 302 of the Radiation Protection Act (35 P. S. §§ 7110.301 and 7110.302), unless otherwise noted.

**Source**

The provisions of this Chapter 277 adopted April 8, 1988, effective April 9, 1988, 18 Pa.B. 1681, unless otherwise noted.

**Cross References**

This chapter cited in 25 Pa. Code § 252.3 (relating to scope); 25 Pa. Code § 266b.11 (relating to waste management for universal waste mercury-containing devices); 25 Pa. Code § 271.2 (relating to scope); 25 Pa. Code § 271.121 (relating to application contents); 25 Pa. Code § 271.504 (relating to operating requirements); and 25 Pa. Code § 271.801 (relating to scope).

**Subchapter A. GENERAL**

Sec.  
277.1. Scope.

**§ 277.1. Scope.**

This chapter sets forth application and operating requirements for persons or municipalities that operate construction/demolition waste landfills. The require-

ments in this chapter are in addition to the applicable requirements in Chapter 271 (relating to municipal waste management—general provisions).

### **Subchapter B. APPLICATION REQUIREMENTS**

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**GENERAL****§ 277.101. Two-phase process.**

A person or municipality may submit an application for a permit to operate a construction/demolition waste landfill in two phases, known as Phase I and Phase II, under this subchapter. Approval by the Department of a Phase I application does not constitute or guarantee approval for the Phase II permit application, issuance of the permit or authority to operate a construction/demolition waste landfill.

**PHASE I APPLICATION REQUIREMENTS****§ 277.111. General.**

The Phase I application shall:

- (1) Comply with the requirements of this section and §§ 277.112—277.122.
- (2) Comply with the applicable requirements of Chapter 271, Subchapter B (relating to general requirements for permits and permit applications).

**Source**

The provisions of this § 277.111 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (226265).

**§ 277.112. Facility plan.**

An application to operate a construction/demolition waste landfill shall contain a narrative describing the following:

- (1) The general operational concept for the proposed facility, including the origin, composition and weight or volume of solid waste that is proposed to be disposed of at the facility, type of liner system, the proposed capacity of the facility, the expected life of the facility and the size, sequence and timing of solid waste disposal operations at the facility.
- (2) A detailed description of the volume of soil needed to construct and operate the facility and of the method by which the soil will be delivered. The description will include the number of trucks, the access roads they will use, delivery times and any other information relevant to assessing the impacts of the operation.

**Source**

The provisions of this § 277.112 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226265) to (226266).

**Cross References**

This section cited in 25 Pa. Code § 277.111 (relating to general).

**§ 277.113. Maps and related information.**

(a) An application shall contain a topographic map on a scale in which 1 inch equals no more than 200 feet with 10-foot maximum contour intervals, including necessary narrative descriptions, which shows the following:

(1) The boundaries and names of present owners of record of land, both surface and subsurface, and including easements, rights-of-way and other property interests, for the proposed permit area and adjacent area; the boundaries of the land within the proposed permit area; and a description of title, deed or usage restrictions affecting the proposed permit area.

(2) The boundaries of the land to be affected during the estimated total life of the proposed operation, including the boundaries of areas that will be affected in each sequence of landfilling activity and boundaries of areas that will be used for impoundments.

(3) The location of areas on and off the permit area which are proposed to be excavated to obtain earthen material for the construction of the facility, for cover material and for other construction purposes.

(4) The location and name of public and private water sources within 1/2 mile of the proposed facility. If more than 50 wells are located within the 1/2 mile radius, the applicant may identify only the closest wells in each direction and generally describe the location and number of wells further away.

(5) The location, name and elevation of surface water bodies, such as springs, streams, lakes, ponds, wetlands, constructed or natural drains, and irrigation ditches within 1/4 mile of the proposed facility.

(6) The location of gas and oil wells (active and inactive) surface and underground coal and noncoal mines (active and inactive) coal seams to a depth of 500 feet, mine spoil piles, dumps, dams, embankments and mine pool discharge points within 1/4 mile of the proposed facility.

(7) The location of rights-of-way for high-tension power lines, pipelines, railroads and public and private roads within 1/4 mile of the proposed facility.

(8) The location of buildings currently in use within 1/4 mile of the proposed facility.

(9) If solid waste disposal or processing has previously taken place within 1/4 mile of the proposed facility, the names of the owners or operators, or both, of the facility, the type of solid waste processed or disposed, and when applicable, cross sections indicating the interface details between areas previously filled and areas to be filled.

(10) The anticipated location of water quality monitoring points.

(11) The boundaries of land within the proposed permit area or adjacent area identified in § 277.202 (relating to areas where construction/demolition waste landfills are prohibited).

(12) The elevation and location of test borings and core samplings taken under § 277.115 (relating to geology and groundwater description), and the location of test pits or excavations taken under § 277.117 (relating to soils description).

(13) The municipalities in which the permit area is proposed to be located.

(14) The location of 100-year floodplain boundaries in the proposed permit area and adjacent area.

(15) The location of sinkholes, fractures, fracture traces, outcrops, lineaments and mine pools in the proposed area and adjacent area.

(16) The location of water discharges into a surface body of water in the proposed permit area and adjacent area.

(b) A different scale for the topographic map required in subsection (a) may be used if approved in writing by the Department.

(c) An application shall contain a topographic map showing the location and name of public water sources within 3 miles downstream or downgradient from the proposed facility. The map shall be on a scale of 1 inch equals no more than 500 feet with 10-foot maximum contour intervals including necessary narrative descriptions.

#### Source

The provisions of this § 277.113 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226266) to (226267).

#### Cross References

This section cited in 25 Pa. Code § 277.111 (relating to general).

### § 277.114. Description of geology, soils and hydrology—general requirements.

In preparing the soils, geology and hydrology descriptions required by §§ 277.115—277.120 the applicant shall include information about the proposed permit area and the adjacent area. Plans and cross sections submitted to comply with §§ 277.115—277.122 shall be on a scale in which 1 inch equals no more than 200 feet, with contour intervals at a maximum of 10 feet. Maps and cross sections submitted for a particular application shall be of the same or easily compared scales.

#### Source

The provisions of this § 277.114 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226267) to (226268).

#### Cross References

This section cited in 25 Pa. Code § 277.111 (relating to general).

**§ 277.115. Geology and groundwater description.**

(a) An application shall contain a description of the geology and groundwater in the proposed permit area and adjacent area down to and including the lowest aquifer that may be affected by the facility, including the following:

(1) The results of a sufficient number of test borings and core borings to accurately characterize geology, soils, groundwater flow, groundwater chemistry and flow systems of the proposed permit area and adjacent area, which shall be at least three test borings. At least one test boring shall be a core boring. The applicant shall include the actual surface elevations of the drill holes.

(2) Stratigraphy, lithologic, physical characteristics and thickness of each stratum, including the location and depth of aquifers.

(3) The hydrologic characteristics of each aquifer described in paragraph (2), including field test data for hydraulic conductivity, storage coefficient and transmissivity, groundwater hydraulic gradient and velocity. The description of these characteristics shall be based on multiple well aquifer tests. Alternative techniques approved by the Department may be employed when multiple well aquifer tests are not feasible. The application shall include the procedures and calculations used to determine these characteristics.

(4) The geologic structure within the proposed permit area and adjacent area, and its relation to the regional geological structure.

(5) The uses of each aquifer.

(6) Aquifer characteristics necessary to accurately describe three dimensional groundwater flow through the proposed permit area and adjacent area, including storage and discharge characteristics.

(7) Extent of coal and noncoal mineral deposits and mines within the proposed permit area, as required by § 277.120 (relating to mineral deposits information).

(8) The well head protection areas in accordance with § 109.1 (relating to definitions) that may be impacted by the facility.

(9) A groundwater contour map based upon the highest groundwater level recorded monthly in each boring for the previous year. The Department may require more frequent measurements after significant precipitation events.

(b) A boring or coring not cased and capped or not to be used for groundwater monitoring shall be grouted shut or otherwise sealed in a manner approved by the Department.

**Source**

The provisions of this § 277.115 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (226268).

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**Cross References**

This section cited in 25 Pa. Code § 277.111 (relating to general); 25 Pa. Code § 277.113 (relating to maps and related information); and 25 Pa. Code § 277.114 (relating to description of geology, soils and hydrology—general requirements).

**§ 277.116. Groundwater quality description.**

(a) An application shall contain a description of the chemical characteristics of each aquifer in the proposed permit area and adjacent area, based on at least 6 consecutive months of monitoring data. This description shall be based on quarterly sampling and analysis from each monitoring well for the following parameters and elevations:

(1) Chloride, sulfate, chemical oxygen demand, pH, specific conductance, total organic carbon, total organic halogen, iron, lead and sodium.

(2) Groundwater elevations in monitoring wells recorded as a distance from the elevation at the well head referenced to mean sea level based on United States Geological Survey datum.

(b) For construction/demolition waste landfills permitted by the Department after April 9, 1988, the 6 months of data required by this section shall be taken prior to the disposal or storage of waste at the facility.

(c) For construction/demolition waste landfills permitted by the Department before April 9, 1988, the 6 months of data required by this section shall be taken beginning with the first anniversary date of the issuance of the permit after April 9, 1988.

(d) Monitoring wells under this section shall be designed, constructed and maintained under §§ 277.281—277.283 (relating to general requirements; number, location and depth of monitoring points; and standards for wells for casing of wells).

**Source**

The provisions of this § 277.116 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (226269).

**Cross References**

This section cited in 25 Pa. Code § 277.111 (relating to general); 25 Pa. Code § 277.114 (relating to description of geology, soils and hydrology—general requirements); and 25 Pa. Code § 277.152 (relating to water quality monitoring plan).

**§ 277.117. Soils description.**

(a) An application shall contain the following:

(1) A description of the depth to the seasonal high water table within the proposed permit area and adjacent area to demonstrate that the seasonal high water table will not contact the liner system.

(2) A description of the soils to be used for intermediate cover, final cover and facility construction, including, texture, chemical description, laboratory



particle size analysis and quantity. A cross-section of the borrow pits within the proposed permit area shall be included.

(3) For an expansion of a facility under § 277.122 (relating to modification to expand existing landfill), a description of the soils within the proposed permit area and adjacent area down to the bedrock, including, for each soil horizon, depth, matrix, color, texture, structure, consistency, degree of mottling, mottling colors and laboratory particle size analysis.

(b) In preparing the soils description, the applicant shall:

(1) Base the description on a sufficient number of pits, excavations and samples to allow an accurate characterization of the soils in the proposed permit area and adjacent area, and each borrow area, whether onsite or offsite.

(2) Use the following soil classification systems:

(i) For intermediate and final cover, the United States Department of Agriculture Soil Classification System.

(ii) For the liner system, site construction and other noncover uses, the Unified Soil Classification System.

(3) Conduct required laboratory particle size analyses according to ASTM D 422 (Standard Method for Particle Size Analysis of Soils) or another analytical method approved, in writing, by the Department prior to the analyses.

(c) For an expansion of a facility under § 277.122, the application shall contain an explanation, based on the soils described in this section, of how the facility would comply with § 277.246 (relating to attenuating soil base).

#### Source

The provisions of this § 277.117 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226269) to (226270).

#### Cross References

This section cited in 25 Pa. Code § 277.111 (relating to general); 25 Pa. Code § 277.113 (relating to maps and related information); and 25 Pa. Code § 277.114 (relating to description of geology, soils and hydrology—general requirements).

### § 277.118. Surface water information.

(a) An application shall contain a description of surface waters in the proposed permit area and adjacent area, including, at a minimum:

(1) A description of the watershed in which the proposed permit area is located and other watersheds which may be affected by the proposed facility.

(2) Surface elevations and rates of flow of perennial streams in the proposed permit area and adjacent area.

(3) A description of the quality of surface waters which will receive flows from surface or groundwater from the proposed permit area, including laboratory analyses of samples.

(4) A description of the instream macro-invertebrate community in surface waters above and below the permit area.

(b) The surface water information submitted to the Department shall be based on a sufficient number of observations, calculations, weir or flow meter readings and sample analyses to allow an accurate characterization of the physical, chemical and biological characteristics of the surface waters.

**Cross References**

This section cited in 25 Pa. Code § 277.111 (relating to general); and 25 Pa. Code § 277.114 (relating to description of geology, soils and hydrology—general requirements).

**§ 277.119. Alternative water supply information.**

(a) The applicant shall determine whether the proposed facility is within the groundwater recharge area for a public or private water supply. The application shall delineate the position of the proposed permit area within relevant groundwater flow systems. The applicant shall identify the public and private water supplies which may potentially be adversely affected by groundwater flow associated with the proposed facility.

(b) For water supplies which may be adversely affected by the proposed facility, the applicant shall submit a detailed hydrogeologic study addressing the potential effect of the proposed facility on the water supplies.

(c) For water supplies which the hydrogeologic study required under subsection (b) indicates may be adversely affected by the proposed facility, the applicant shall demonstrate the following:

(1) The hydrogeologic characteristics of the proposed permit area and adjacent area assure that implementation of the applicant's groundwater monitoring plan will protect water supplies from potential degradation or pollution.

(2) The feasibility of permanently replacing or restoring the water supply to like quantity and quality with the existing supply and at no additional cost to the owner. A description of the means to restore or replace the water supply shall also be provided.

(d) For purposes of this section, the term water supply includes existing or currently designated or currently planned sources of water or facilities or systems for the supply of water for human consumption or for agricultural, commercial, industrial or other legitimate use, including the uses protected by the applicable provisions of Chapter 93 (relating to water quality standards).

**Cross References**

This section cited in 25 Pa. Code § 277.111 (relating to general); and 25 Pa. Code § 277.114 (relating to description of geology, soils and hydrology—general requirements).

**§ 277.120. Mineral deposits information.**

(a) If the proposed permit area and adjacent area overlie existing workings of an underground mine, the applicant shall submit sufficient information to evaluate the potential for mine subsidence damage to the facility, including the following:

- (1) Maps and plans showing previous mining operations underlying the proposed facility.
- (2) An investigation, with supporting documentation, by a registered professional engineer with geotechnical expertise addressing the probability and potential impacts of future subsidence. The investigation shall address the potential for additional mining beneath the permit and adjacent area, the stability of the final underground workings, the maximum subsidence likely to occur in the future and the effect of that subsidence on the integrity of the facility, and any measures which have been or will be taken to stabilize the surface.
- (b) If the proposed permit area or adjacent area overlies recoverable or mineable coals, the applicant shall meet one of the following requirements:
  - (1) The applicant shall demonstrate that the applicant owns the coal and warrants that the coal will not be mined as long as construction/demolition waste remains on the site.
  - (2) The applicant shall meet the following requirements:
    - (i) The applicant owned or entered into an enforceable option contract to purchase land on which the expansion would operate on or before December 23, 2000, and still holds the option rights, still owns the land or owns the land pursuant to the option rights contract when the permit expansion is issued.
    - (ii) The applicant submits a written agreement executed prior to December 23, 2000, that demonstrates that coal providing support will not be mined as long as waste remains on the site.

#### Source

The provisions of this § 277.120 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226271) to (226272).

#### Cross References

This section cited in 25 Pa. Code § 277.111 (relating to general); 25 Pa. Code § 277.114 (relating to description of geology, soils and hydrology—general requirements); 25 Pa. Code § 277.115 (relating to geology and groundwater description); 25 Pa. Code § 277.202 (relating to areas where construction/demolition waste landfills are prohibited); and 25 Pa. Code § 277.291 (relating to mineral resources).

### § 277.121. Notification of proximity to airport.

An applicant shall notify the Bureau of Aviation of the Pennsylvania Department of Transportation, the Federal Aviation Administration and the airport if a proposed landfill or expansion is within 6 miles of an airport runway. The application shall include a copy of each notification and each response to each notification received by the applicant.

#### Source

The provisions of this § 277.121 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685.

**Cross References**

This section cited in 25 Pa. Code § 271.111 (relating to general); and 25 Pa. Code § 277.114 (relating to description of geology, soils and hydrology—general requirements).

**§ 277.122. Modification to expand existing landfill.**

For a construction/demolition waste landfill constructed with attenuating soil and permitted by the Department prior to December 23, 2000, the Department may waive or modify the liner system and leachate treatment requirements in this chapter in the approval of a complete application for permit modification for expansion of the landfill if the operator demonstrates the following:

- (1) No groundwater degradation has occurred from the existing operation.
- (2) The physical properties and chemical composition of the waste that will be received under the permit modification will not change from that approved under the existing permit.

**Source**

The provisions of this § 277.122 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685.

**Cross References**

This section cited in 25 Pa. Code § 277.111 (relating to general); 25 Pa. Code § 277.114 (relating to description of geology, soils and hydrology—general requirements); 25 Pa. Code § 277.117 (relating to soils description); 25 Pa. Code § 277.233 (relating to final cover and grading); and 25 Pa. Code § 277.251 (relating to scope and requirements).

**PHASE II APPLICATION REQUIREMENTS—  
GENERAL PROVISIONS****§ 277.131. Basic requirements.**

- (a) The Phase II permit application shall:
  - (1) Comply with this section and §§ 277.132—277.137, 277.141, 277.142, 277.151, 277.152, 277.161—277.164, 277.171, 277.181, 277.191 and 277.192.
  - (2) Comply with Chapter 271, Subchapter D (relating to financial assurances requirements).
- (b) Applications, plans, cross sections, modules and narratives shall demonstrate how the construction and operating requirements of Subchapter C (relating to operating requirements) will be implemented, and shall include quality control measures necessary to ensure proper implementation.
- (c) The plans, designs, cross sections and maps required by this section and §§ 277.132—277.137, 277.141, 277.142, 277.151, 277.152, 277.161—277.163, 277.171, 277.181, 277.191 and 277.192 shall be on a scale in which 1 inch equals no more than 200 feet with 10-foot maximum contour intervals.

**Source**

The provisions of this § 277.131 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (226272).

**§ 277.132. Operation plan.**

An application shall contain a description of the construction/demolition waste landfill operations proposed during the life of the facility within the proposed permit area, including, at a minimum, the following:

(1) A narrative describing the type and method of construction/demolition waste landfill procedures, procedures for inspection and monitoring of incoming waste, sequence of landfilling activity, type of landfilling activity, proposed engineering techniques and the major equipment to be used under § 277.215 (relating to equipment), using the maps and grids required by § 277.133 (relating to map and grid requirements) as a basis for description.

(2) A narrative explaining the method and schedule for construction, operation, modification, use, maintenance and removal of the following components of the proposed facility, unless their retention is proposed for postclosure land use:

- (i) Dams, embankments, ditches and other impoundments.
- (ii) Borrow pits, soil storage and handling areas and structures.
- (iii) Water and air pollution control facilities.
- (iv) Erosion control facilities.
- (v) Equipment storage and maintenance buildings, and other buildings.
- (vi) Access roads.

(3) A construction schedule tied to the grid coordinate system required by § 277.133, a site preparation plan and a schedule for disposing of solid waste at the site, including the maximum daily volume or weight of waste that will be received at the facility.

(4) An explanation of how the applicant intends to comply with § 277.214 (relating to measurement and inspection of waste).

(5) A plan for assuring that solid waste received at the facility is consistent with § 277.201 (relating to basic limitations).

(6) The proposed operating hours of the proposed facility. The operating hours include those hours related to construction and other activities related to operation of the facility.

**Source**

The provisions of this § 277.132 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226272) to (226273).

**Cross References**

This section cited in 25 Pa. Code § 277.131 (relating to basic requirements).

**§ 277.133. Map and grid requirements.**

(a) An application shall contain a topographic map of the proposed permit area and adjacent area, including necessary narrative descriptions, showing the following:

- (1) The boundaries of lands proposed to be affected over the estimated total life of the proposed operation and the sequence of landfilling and closure.
- (2) Changes in a component of the facility or a feature within the proposed permit area to be caused by the proposed operation.
- (3) Buildings, utility corridors and facilities which will be used in the operation.
- (4) The areas of land for which a bond will be posted under Chapter 271, Subchapter D (relating to financial assurances requirements).
- (5) Solid waste storage, processing or unloading areas.
- (6) The water diversion, collection, conveyance, erosion and sedimentation control, treatment, storage and discharge facilities to be used.
- (7) Location and elevation of the permanent physical marker for the grid coordinate system required by subsection (b).
- (8) The gas management, collection and control facilities, if required or proposed.
- (9) The boundaries of construction activities.
- (10) The location of barriers, fences and similar structures required by § 277.212 (relating to access control).
- (11) The location of each sedimentation pond, permanent water impoundment or similar facility.
- (12) The location of access roads to the site, including slopes, grades and lengths of the roads.
- (13) The location and identification of monitoring wells.
- (14) A designated area for vehicles for use in the event of the detection of waste containing radioactive material. The designated area shall, by location or shielding, protect the environment, facility staff and public from radiation originating in the vehicle. The Department's "*Guidance Document on Radioactivity Monitoring at Solid Waste Processing and Disposal Facilities*" Document Number 250-3100-001, describes various factors to consider in determining an appropriate designated area.

(b) The applicant shall also submit a grid coordinate system for the entire proposed permit area. The horizontal control system shall consist of a grid not to exceed 200-foot-square sections. A permanent benchmark for horizontal and vertical control shall be shown. The grid system shall be tied to the benchmark and baseline.

**Source**

The provisions of this § 277.133 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226273) to (226274).

**Cross References**

This section cited in 25 Pa. Code § 277.131 (relating to basic requirements); and 25 Pa. Code § 277.132 (relating to operation plan).

**§ 277.134. Plan for access roads.**

The application shall contain designs, cross sections and specifications for access roads, including load limits, under § 277.213 (relating to access roads).

**Source**

The provisions of this § 277.134 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (226274).

**Cross References**

This section cited in 25 Pa. Code § 277.131 (relating to basic requirements); and 25 Pa. Code § 277.213 (relating to access roads).

**§ 277.135. Access control plan.**

The application shall contain plans sufficient to demonstrate compliance with § 277.212 (relating to access control), including plans showing fencing and barriers to be constructed at the facility in full elevation, fully dimensioned and with the type of construction materials specified.

**Cross References**

This section cited in 25 Pa. Code § 277.131 (relating to basic requirements).

**§ 277.136. Nuisance minimization and control plan.**

(a) The application shall contain a plan in accordance with § 277.218 (relating to nuisance minimization and control) to minimize and control hazards or nuisances from vectors, odors, noise, dust and other nuisances not otherwise provided for in the permit application.

(b) The plan shall include the following:

- (1) Provisions for the routine assessment and control of vector infestation.
- (2) Methods to minimize and control nuisances from odors, dustfall and noise off the property boundary from the facility.
- (3) For odors, the determination of normal and adverse weather conditions based on site-specific meteorological data. Prior to the installation of equipment and collection of meteorological data, a protocol for the installation and data collection shall be approved by the Department.

(c) The plan required in subsection (a) may include a contractual arrangement for services of an exterminator or an air quality, noise, dust control or other professional.

**Source**

The provisions of this § 277.136 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (226274).

**Cross References**

This section cited in 25 Pa. Code § 277.131 (relating to basic requirements); and 25 Pa. Code § 277.218 (relating to nuisance minimization and control).

**§ 277.137. Litter control plan.**

The application shall contain a plan under § 277.220 (relating to litter) to control litter.

**Cross References**

This section cited in 25 Pa. Code § 277.131 (relating to basic requirements).

**§ 277.138. Recycling plan.**

The application shall contain a plan for salvaging and recycling waste materials received at the facility for which recycling is cost effective, including proposed salvage areas, salvaging methods and anticipated markets for salvaged materials, in accordance with § 277.219 (relating to recycling).

**Source**

The provisions of this § 277.138 adopted October 9, 1992, effective October 10, 1992, 22 Pa.B. 5105; amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (266307).

**Cross References**

This section cited in 25 Pa. Code § 277.219 (relating to recycling).

**§ 277.139. Daily volume.**

(a) The application shall contain proposed average and maximum daily volumes for the facility, and a detailed justification for these volumes, based on §§ 271.126 and 271.127 (relating to requirement for environmental assessment; and environmental assessment).

(b) The average daily volume is a limit on the volume of solid waste that is permitted to be received at the facility, and shall be computed quarterly by averaging the total volume received over the quarter.

**Source**

The provisions of this § 277.139 adopted December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685.

**§ 277.140. Radiation protection action plan.**

(a) An application shall contain an action plan specifying procedures for monitoring for and responding to radioactive material entering the facility, as well as related procedures for training, notification, recordkeeping and reporting.

(b) The action plan shall be prepared in accordance with the Department's "Guidance Document on Radioactivity Monitoring at Solid Waste Processing and Disposal Facilities," Document Number 250-3100-001, or in a manner at least as



protective of the environment, facility staff and public health and safety and which meets all statutory and regulatory requirements.

(c) The action plan shall be incorporated into the landfill's approved waste analysis plan, under § 271.613 (relating to waste analysis plan).

#### Source

The provisions of this § 277.140 adopted December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685.

#### Cross References

This section cited in 25 Pa. Code § 277.222 (relating to radiation monitoring and response).

### PHASE II APPLICATION REQUIREMENTS— COVER AND REVEGETATION

#### § 277.141. Compaction and cover plan.

An application shall contain a plan for compaction and cover at the proposed landfill under §§ 277.216, 277.232 and 277.233 (relating to unloading and compaction; intermediate cover and slopes; and final cover and grading), including, at a minimum, the following information:

- (1) The procedures for, and degree of, compaction of solid waste.
- (2) The number and thickness of lifts.
- (3) The materials and procedures for application of intermediate cover and final cover material that meet the standards in §§ 277.232 and 277.233.
- (4) The procedures to establish intermediate and final elevations for the landfill.

#### Source

The provisions of this § 277.141 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (226307).

#### Cross References

This section cited in 25 Pa. Code § 277.131 (relating to basic requirements).

#### § 277.142. Revegetation plan.

An application shall contain a plan for revegetation of affected areas under §§ 277.234 and 277.235 (relating to revegetation; and standards for successful revegetation). The plan shall identify the species that are proposed to be planted, seeding rates and method of revegetation.

#### Cross References

This section cited in 25 Pa. Code § 277.131 (relating to basic requirements).

**PHASE II APPLICATION REQUIREMENTS—WATER QUALITY  
PROTECTION AND MONITORING**

**§ 277.151. Soil erosion and sedimentation control plan.**

(a) The applicant shall submit a plan to manage surface water and control erosion during all phases of construction and operation at the facility. The plan shall be based on the requirements of Chapter 102 (relating to erosion and sediment control), §§ 277.242—277.244 (relating to soil erosion and sedimentation control; sedimentation ponds; and discharge structures) and other applicable State and Federal requirements. Calculations indicating water quantities shall be based on the 24-hour precipitation event in inches to be expected once in 25 years. More stringent design standards may be required by the Department based on the most recent edition of the United States Department of Agriculture Soil Conservation Service “Engineering Field Manual for Conservation Practices.”

(b) The plan shall include fully dimensioned diversion ditches, indicating length, gradient and cross section for configuration by reach, and capacities for ditch volume by reach. Calculations which are necessary to support design and siting of the structures shall be included in the plan.

**Cross References**

This section cited in 25 Pa. Code § 277.131 (relating to basic requirements).

**§ 277.152. Water quality monitoring plan.**

(a) An application shall contain a water quality monitoring plan showing how the operator intends to comply with §§ 277.281—277.288 (relating to water quality monitoring). The plan shall include, at a minimum, the following:

- (1) The number, location and depth of proposed monitoring points.
- (2) Preoperational data showing existing groundwater quality as required by § 277.116 (relating to groundwater quality description), and a procedure to establish this groundwater quality.

(b) The application shall contain a groundwater sampling and analysis plan. The plan shall include:

- (1) Procedures and techniques designed to accurately measure groundwater quality upgradient, beneath and downgradient of the proposed waste disposal area.
- (2) Department approved sampling and analytical methods that are specific to the proposed facility and that will accurately measure solid waste constituents, leachate or constituents of decomposition in the groundwater.
- (3) Procedures and techniques for sample collection, sample preservation and shipment, analytical procedures, chain of custody control and field and laboratory quality assurance and quality control.

(c) The Department may approve the use of an alternate groundwater monitoring system for facilities located in the anthracite coal region if the applicant demonstrates to the Department's satisfaction with a detailed hydrogeologic study that the following exist:

- (1) The nature and extent of underground coal mining beneath the facility make impracticable the installation of the groundwater monitoring system required by this subchapter.
- (2) The proposed alternate system is capable of completely and accurately identifying groundwater degradation and pollution from the proposed facility.

#### Source

The provisions of this § 277.152 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (266308) and (226277).

#### Cross References

This section cited in 25 Pa. Code § 277.131 (relating to basic requirements).

### PHASE II APPLICATION REQUIREMENTS— LINERS AND LEACHATE MANAGEMENT

#### § 277.161. Liner system and leachate control plan.

(a) The application shall contain plans, drawings, cross sections and specifications for a liner system to demonstrate compliance with §§ 277.251—277.260 (relating to liner system) including:

- (1) Design of the liner system, including the thickness and characteristics of the subbase, the thickness and characteristics of the leachate detection zone, the design for the leachate monitoring system in the leachate detection zone, the nature and thickness of the liner material, the thickness and characteristics of the protective cover and leachate collection zone and the design for the leachate collection system in the leachate collection zone.
- (2) A plan for installing the liner system.

(b) The application shall include a quality assurance and quality control plan for the construction and installation of the liner system. The plan shall include at a minimum:

- (1) A description of the testing procedures and construction methods proposed to be implemented during construction of the liner system.
- (2) A description of the manner in which the protective cover and liner system will be maintained and protected in unfilled portions of the disposal area during and prior to placement of the initial lift of solid waste.
- (3) A description of the manner in which the protective cover and liner system will be protected from weather during placement of the initial lift of solid waste.

- (4) A description of the qualifications of the quality assurance and quality control personnel, presented in terms of the experience and training necessary to implement the plan.
- (5) A sampling plan for every component of the liner system, including sample size, methods for determining sample locations, sampling frequency acceptance and rejection criteria and methods for ensuring that corrective measures are implemented as soon as possible.
- (6) A plan for documenting compliance with the quality assurance and quality control plan.
- (c) The application shall demonstrate that leachate will not adversely affect the physical or chemical characteristics of the proposed liner, or inhibit the liner's ability to restrict the flow of solid waste, solid waste constituents or leachate, based on EPA or ASTM guidelines approved by the Department.
- (d) The application shall include a complete description of the physical, chemical, mechanical and thermal properties for the proposed primary and secondary liners, based on ASTM methods when appropriate. Except to the extent that the Department waives in writing any of the following for nonsynthetic secondary liners, these properties shall include, at a minimum:
  - (1) Thickness.
  - (2) Tensile strength at yield.
  - (3) Elongation at yield.
  - (4) Elongation at break.
  - (5) Density.
  - (6) Tear resistance.
  - (7) Carbon black content.
  - (8) Puncture resistance.
  - (9) Seam strength (percentage of liner strength).
  - (10) Ultraviolet light resistance.
  - (11) Carbon black dispersion.
  - (12) Permeability.
  - (13) Liner friction angle in degrees.
  - (14) Stress crack resistance.
  - (15) Oxidative induction time.
  - (16) Chemical compatibility.
  - (17) Percent recycled materials.

#### Source

The provisions of this § 277.161 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226277) to (226279).

#### Cross References

This section cited in 25 Pa. Code § 277.131 (relating to basic requirements); and 25 Pa. Code § 277.255 (relating to liner).

**§ 277.162. Leachate treatment plan.**

(a) The application shall contain a plan for treating leachate from the proposed facility in a manner that complies with §§ 277.271—277.276. The plan shall include:

(1) An estimate of the quality and quantity of leachate that is estimated to be produced annually by the facility, based on the water balance method set forth in “Use of Water Balance Method for Predicting Leachate Generation from Solid Waste Disposal Sites” U. S. EPA SW-168 (1975), or another method of accurately projecting leachate flows that is approved by the Department, in writing. The estimate shall include the 30-day leachate volume and average flow rate for each month of the year. A separate estimate shall be submitted for anticipated leachate generation at the end of 5-year increments of operation for 20 years, or until closure, whichever date is earlier. For existing facilities, current leachate generation shall be included with this separate estimate.

(2) Plans, designs and cross sections for the proposed collection and handling system.

(3) Plans, designs and cross sections for onsite treatment or disposal systems, including tanks and impoundments that are proposed to be used or constructed for storage, pretreatment or treatment of leachate from the facility.

(4) If a treatment system already in operation is proposed to treat leachate from the facility, a description of the system, including its NPDES permit number, its capability to treat leachate from the facility, and its compliance status under The Clean Streams Law (35 P. S. §§ 691.1—691.1001) and regulations thereunder.

(b) If interim vehicular transportation to an offsite treatment facility is proposed, the applicant shall:

(1) Provide a copy of a signed contractual agreement with the operator of a primary offsite facility that provides for treatment of leachate at the facility, and which covers the period of time that offsite treatment will be provided; or provide a signed letter of intent from the operator of the offsite facility to enter a contractual agreement for leachate treatment if the permit application is approved by the Department.

(2) Provide a copy of a signed contractual agreement with the operator of a second offsite treatment facility that provides for backup treatment of leachate at the second treatment facility if, for any reason, leachate cannot be treated by the primary treatment facility operator; or provide a signed letter of intent from the operator of the second offsite facility to enter the contractual agreement if the permit application is approved by the Department.

(3) Submit additional bond to the Department in an amount sufficient to pay for the cost of vehicular transportation and offsite leachate treatment until final closure if the landfill operator fails to provide offsite treatment in a manner consistent with the permit, the act and this chapter.

- (4) Submit plans, designs and cross sections for an onsite pretreatment facility as required by § 277.273(b)(1) (relating to leachate transportation).
- (c) If leachate recirculation of raw or pretreated leachate is proposed in conjunction with another treatment method, the application shall describe the following:
- (1) The proposed leachate distribution method over the filled area, including designs and cross sections.
  - (2) Methods that will be used to prevent leachate seeps and breakouts.
  - (3) Methods that will be used to prevent odors, runoff and ponding.
- (d) The application shall also contain a schedule and method for cleaning sludges from the leachate storage and treatment system, and a plan for disposing of the sludges.

#### Source

The provisions of this § 277.162 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226279) to (226280).

#### Cross References

This section cited in 25 Pa. Code § 277.131 (relating to basic requirements); 25 Pa. Code § 277.164 (relating to application requirements for noncoal mine disposal); 25 Pa. Code § 277.201 (relating to basic limitations); and 25 Pa. Code § 277.275 (relating to leachate collection and storage).

### § 277.163. Modifications in leachate treatment plan.

- (a) If a problem identified in § 277.277 (relating to Departmental notice and remedial action) occurs, the operator shall submit to the Department, within 60 days, a permit modification application under § 271.222 (relating to permit modification), with plans, designs and cross sections to modify its leachate treatment plan.
- (b) The Department may approve permit modification applications under § 271.222 to extend, by 1 year at a time, the 3-year limitation for leachate transportation in § 277.273(a) (relating to leachate transportation) if the following apply:
- (1) The applicant complies with § 273.162(b) (relating to leachate treatment plan).
  - (2) The applicant has obtained the necessary permits to construct and operate a leachate treatment system under § 277.272 (relating to basic treatment methods).
  - (3) Leachate transportation from the facility has not caused or contributed to surface water or groundwater pollution.
  - (4) The applicant has a valid contract for the treatment of leachate at an offsite treatment facility for the 1-year term of the proposed permit modification.
  - (5) The offsite treatment facility to which leachate would be transported is operating in compliance with The Clean Streams Law (35 P. S. §§ 691.1—

691.1001) and regulations thereunder, and is otherwise capable of accepting and treating leachate from the landfill.

(6) The landfill has a remaining permitted life, based on permitted capacity, of at least 3 years.

#### Source

The provisions of this § 277.163 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226280) to (226281).

#### Cross References

This section cited in 25 Pa. Code § 277.131 (relating to basic requirements); and 25 Pa. Code § 277.273 (relating to leachate transportation).

### § 277.164. Application requirements for noncoal mine disposal.

(a) In addition to the other requirements of this subchapter, a person or municipality that applies for an expansion of a construction/demolition waste landfill permit in a noncoal mine permitted prior to December 23, 2000, shall submit a plan, including necessary drawings, designs and specifications, to show how the applicant will comply with § 277.259 (relating to noncoal mine disposal).

(b) The application shall:

(1) Quantify the rate of surface and groundwater flow into the noncoal mine, including a minimum of 15 years historical pumping data with particular emphasis on seasonal maximums.

(2) Include a detailed hydrogeological evaluation of the structure, permeability, transmissivity and stability of the rock in the noncoal mine.

(3) Include a plan for lining the bottom and walls of the noncoal mine as set forth in §§ 277.251—277.260 (relating to liner system), or a detailed justification for not providing the liner system to protect surface and groundwater.

(4) Include a plan for ensuring that funds are available to maintain and operate the pumping system until the leachate and the facility are no longer capable of causing surface water or groundwater pollution.

(5) Quantify leachate generation based upon a 100 year, 24-hour precipitation event using methods that are required by § 277.162(a)(1) (relating to leachate treatment plan).

#### Source

The provisions of this § 277.164 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (226281).

#### Cross References

This section cited in 25 Pa. Code § 277.131 (relating to basic requirements).

**PHASE II APPLICATION REQUIREMENTS—  
GAS MANAGEMENT**

**§ 277.171. Gas monitoring and recovery plan.**

When the decomposition of the construction/demolition waste that is proposed to be disposed at the facility may generate gas, the application shall include a plan sufficient to detect and control gas emanating from the facility. The plan shall include the following:

- (1) A plan to monitor and record gas on and off the site, including structures, offsite gas migration and gas accumulation.
- (2) Designs for a gas control system, indicating the location and scheduling of construction, and the design of vents, barriers, collection pipes, manifolds or other control measures that will be put in place.

**Cross References**

This section cited in 25 Pa. Code § 277.131 (relating to basic requirements); and 25 Pa. Code § 277.292 (relating to gas control and monitoring).

**PHASE II APPLICATION REQUIREMENTS—  
EMERGENCY PLANNING**

**§ 277.181. Contingency plan.**

An application shall contain a contingency plan consistent with §§ 277.301—277.303 (relating to emergency procedures). The plan shall include a Preparedness, Prevention and Contingency (PPC) Plan that is consistent with the Department's most recent guidelines for the development and implementation of PPC plans.

**Cross References**

This section cited in 25 Pa. Code § 277.131 (relating to basic requirements).

**PHASE II APPLICATION REQUIREMENTS—  
CLOSURE PROVISIONS**

**§ 277.191. Postclosure land use plan.**

An application shall contain a detailed description of the proposed use following closure of the proposed facility, including a discussion of the utility and capacity of the land to support a variety of alternative uses, and the relationship of the use to existing land use policies and plans. The description shall explain the following:

- (1) How the proposed postclosure land use is to be achieved and the necessary support activities which may be needed to achieve the proposed land use.



(2) The consideration which has been given to making the proposed post-closure land use consistent with landowner plans and applicable State and local land use plans and programs.

#### Cross References

This section cited in 25 Pa. Code § 277.131 (relating to basic requirements); and 25 Pa. Code § 277.321 (relating to postclosure land use).

### § 277.192. Closure plan.

(a) The application shall contain a plan describing the activities that are proposed to occur in preparation for closure and after closure to ensure compliance with this chapter.

(b) The closure plan shall include:

(1) A plan for the decontamination and removal of equipment, structures and related material from the facility.

(2) An estimate of the year in which final closure will occur, including an explanation of the basis for the estimate.

(3) A description of the steps necessary for closure if the facility closes prematurely.

(4) A narrative description, including a schedule, of measures that are proposed to be carried out in preparation for closure and after closure at the facility, including measures relating to:

(i) Water quality monitoring.

(ii) Gas control and monitoring.

(iii) Leachate collection and treatment.

(iv) Erosion and sedimentation control.

(v) Revegetation and regrading, including maintenance of the final cover.

(vi) Access control, including maintenance of access control.

(5) A description of the means by which funds will be made available to cover the cost of postclosure operations, which shall include an assessment of projected postclosure maintenance costs, a description of how the necessary funds will be raised, a description of where the funds will be deposited, copies of relevant legal documents and a description of how the funds will be managed prior to closure.

(6) The name, address and telephone number at which the operator can be reached during the postclosure period.

#### Source

The provisions of this § 277.192 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (226283).

**Cross References**

This section cited in 25 Pa. Code § 277.131 (relating to basic requirements); and 25 Pa. Code § 277.322 (relating to closure).

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- 277.281. General requirements.
- 277.282. Number, location and depth of monitoring points.
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- 277.291. Mineral resources.
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**RECORDKEEPING AND REPORTING**

- 277.311. Daily operational records.  
277.312. Annual operation report.

**CLOSURE PROVISIONS**

- 277.321. Postclosure land use.  
277.322. Closure.

**Cross References**

This section cited in 25 Pa. Code § 277.131 (relating to basic requirements).

**GENERAL PROVISIONS****§ 277.201. Basic limitations.**

- (a) Except as provided in subsection (b), a person or municipality may not own or operate a construction/demolition waste landfill unless the Department has first issued a permit to the person or municipality for the facility under this chapter.
- (b) A person or municipality may conduct monitoring under § 277.116 (relating to groundwater quality description) without a permit if the Department has given written approval for the monitoring based on written plans that are consistent with this chapter. The monitoring information may be used for a permit application for the proposed facility.
- (c) A person who operates a construction/demolition waste landfill shall comply with the following:
- (1) The act, this article and other applicable regulations promulgated under the act.
  - (2) The plans and specifications in the permit, the terms and conditions of the permit, the environmental protection acts, this title and orders issued by the Department.
- (d) Except for sewage sludge used to assist revegetation after final cover has been applied under the approved permit, municipal waste other than construction/demolition waste may not be disposed at a construction/demolition waste landfill.
- (e) A person or municipality may not allow residual waste to be disposed at the facility unless the Department has specifically approved the disposal of the waste at the facility in the permit.
- (f) The operator may not allow explosive waste to be disposed at the facility.
- (g) Hazardous waste subject to Article VII (relating to hazardous waste management) may not be disposed, processed or stored where a construction/demolition waste landfill is operated.
- (h) Except to the extent that leachate recirculation is allowed in the permit under § 277.162 (relating to leachate treatment plan), bulk or noncontainerized

liquid waste may not be disposed or processed at a construction/demolition waste landfill. Containers holding free liquids may not be accepted unless the container is less than 1 gallon in size, except as otherwise provided in the permit.

- (i) Lead acid batteries may not be disposed at the facility.
- (j) Loads composed mostly of leaf waste may not be disposed at the facility.
- (k) A person or municipality may not allow solid waste to be received, disposed or otherwise managed at the facility if the transportation to, or processing or management at, the facility would violate applicable laws in effect in the county or state in which the waste was generated, or State or local solid waste management plans in effect where the waste was generated.
- (l) The approved mitigation measures identified in the permit application shall be completed before a facility may accept waste unless a later date is authorized in writing by the Department for technical reasons.
- (m) The following radioactive material controlled under specific or general license or order authorized by any Federal, State or other government agency may not be disposed at the facility, unless specifically exempted from disposal restrictions by an applicable Pennsylvania or Federal statute or regulation:
  - (1) Naturally occurring and accelerator produced radioactive material.
  - (2) Byproduct material.
  - (3) Source material.
  - (4) Special nuclear material.
  - (5) Transuranic radioactive material.
  - (6) Low-level radioactive waste.
- (n) The following radioactive material may not be disposed at the facility, unless approved in writing by the Department and the disposal does not endanger the environment, facility staff or public health and safety:
  - (1) Short-lived radioactive material from a patient having undergone a medical procedure.
  - (2) TENORM.
  - (3) Consumer products containing radioactive material.
- (o) The limitations in subsections (m) and (n) do not apply to radioactive material as found in the undisturbed natural environment of this Commonwealth.
- (p) The operator may not accept construction/demolition waste that has been processed to the point that individual components cannot be identified, unless approved by the Department in the permit.

#### Source

The provisions of this § 277.201 adopted April 8, 1988, effective April 9, 1988, 18 Pa.B. 1681; amended October 9, 1992, effective October 10, 1992, 22 Pa.B. 5105; amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (255076) and (226287).

#### Cross References

This section cited in 25 Pa. Code § 277.132 (relating to operation plan).

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**§ 277.202. Areas where construction/demolition waste landfills are prohibited.**

(a) Except for areas that were permitted as a construction/demolition waste landfill prior to April 9, 1988, a construction/demolition waste landfill may not be operated as follows:

(1) *Floodplain.* In the 100-year floodplain of waters of this Commonwealth, unless the Department approves in a permit an equivalent method of protecting the facility from a 100-year flood consistent with the Flood Plain Management Act (32 P. S. §§ 679.101—679.601) and the Dam Safety and Encroachments Act (32 P. S. §§ 693.1—693.27).

(2) *Wetland.*

(i) In or within 300 feet of an exceptional value wetland, as defined in § 105.17 (relating to wetlands).

(ii) For a construction/demolition waste landfill permitted on or after December 23, 2000, other than an expansion of a construction/demolition waste landfill that was permitted prior to December 23, 2000, in or within 100 feet of a wetland other than an exceptional value wetland, unless storage, processing and disposal will not occur within that distance and one of the following applies:

(A) If the operation is in or along the wetland, the operator has received a permit from the Department under Chapter 105 (relating to dam safety and waterway management).

(B) If the operation is not in or along the wetland, no adverse hydrologic or water quality impacts will result.

(3) *Coal-existing facility.* For a construction/demolition waste landfill permit issued prior to December 23, 2000, in coal bearing areas underlain by recoverable or mineable coals, unless the operator of the facility demonstrates and the Department finds, in writing, that the operator owns the underlying coal, or has entered an agreement with the owner of the coal to provide support.

(4) *Coal—expansion.* For an expansion of a construction/demolition waste landfill permitted between April 9, 1988, and December 23, 2000, in coal bearing areas underlain by recoverable or mineable coals, unless one of the following is met:

(i) The applicant owns the underlying coal.

(ii) The following requirements are met:

(A) The applicant owned or entered into an enforceable option contract to purchase the land on which the expansion would operate on or before December 23, 2000, and still holds the option rights, still owns the land or owns the land pursuant to the option rights contract when the permit expansion is issued.

(B) Coal providing support for the expansion area will not be mined as long as waste remains on the site, as demonstrated under § 277.120 (relating to mineral deposits information).

(5) *Coal—new landfill.* For a new construction/demolition waste landfill permitted on or after December 23, 2000, in coal bearing areas underlain by recoverable or mineable coal, unless the permittee owns the underlying coal.

(6) *Valley, ravine or head of hollow.* In a valley, ravine or head of hollow where the operation would result in the elimination, pollution or destruction of a portion of a perennial stream, except that rechanneling may be allowed as provided in Chapter 105.

(7) *Limestone or carbonate formation.* In areas underlain by limestone or carbonate formations where the formations are greater than 5 feet in thickness and present at the topmost geological unit. The areas include an area mapped by the Pennsylvania Geological Survey as underlain by these formations, unless competent geologic studies demonstrate the absence of limestone and carbonate formations under the site.

(8) *Occupied dwelling—existing facility.* Except as provided in paragraphs (9) and (10), a construction/demolition waste landfill may not be operated within 300 feet measured horizontally from an occupied dwelling, unless the current owner of the dwelling has provided a written waiver consenting to the facility being closer than 300 feet. Except as provided in paragraphs (9) and (10), the disposal area of a construction/demolition waste landfill may not be within 500 feet measured horizontally from an occupied dwelling, unless the current owner has provided a written waiver consenting to the disposal area being closer than 500 feet. A waiver shall be knowingly made and separate from a lease or deed unless the lease or deed contains an explicit waiver from the current owner.

(9) *Occupied dwelling—expansion.* For a permitted construction/demolition waste landfill that was operating and not closed as of December 23, 2000, an expansion permitted on or after December 23, 2000, may not be operated within 900 feet measured horizontally from an occupied dwelling, unless one or both of the following conditions are met:

(i) The owner of the dwelling has provided a written waiver consenting to the facility or disposal area being closer than 900 feet. A waiver shall be knowingly made and separate from a lease or deed unless the lease or deed contains an explicit waiver from the owner.

(ii) The applicant owned or entered into an enforceable option contract to purchase the land on which the expansion would operate on or before December 23, 2000, and still holds the option rights, still owns the land or owns the land pursuant to the option rights contract when the permit expansion is issued. Even if the requirement of this subparagraph is met, the expansion may not be operated within 300 feet measured horizontally from

an occupied dwelling and the disposal area may not be within 500 feet measured horizontally from an occupied dwelling.

(10) *Occupied dwelling—new landfill.* A new construction/demolition waste landfill permitted on or after December 23, 2000, may not be operated within 900 feet measured horizontally from an occupied dwelling, unless the owner of the dwelling has provided a written waiver consenting to the facility being closer than 900 feet. A waiver shall be knowingly made and separate from a lease or deed unless the lease or deed contains an explicit waiver from the owner. A closed landfill that submits an application to reopen and expand shall also be subject to this paragraph.

(11) *Occupied dwelling—access road.* Notwithstanding the prohibitions in paragraphs (9) and (10), an access road to a construction/demolition waste landfill may not be operated within 300 feet measured horizontally from an occupied dwelling, unless the owner of the dwelling has provided a written waiver consenting to the access road being closer than 300 feet. A waiver shall be knowingly made and separate from a lease or deed unless the lease or deed contains an explicit waiver from the owner.

(12) *Perennial stream.* Within 100 feet of a perennial stream, unless storage, processing and disposal will not occur within that distance and no adverse hydrologic or water quality impacts will result.

(13) *Property line.* Within 100 feet of a property line, unless one of the following applies:

(i) Actual disposal of waste will not occur within that distance.

(ii) The current owner has provided a written waiver consenting to the facility being closer than 100 feet. The waiver shall be knowingly made and separate from a lease or deed unless the lease or deed contains an explicit waiver from the current owner.

(14) *Water source.* Within 1/4 mile upgradient, and within 300 feet downgradient, of a public or private water source for disposal, processing and storage areas, except that the Department may waive or modify these isolation distances if the operator demonstrates and the Department finds, in writing, that the following conditions have been met:

(i) The owners of the public and private water sources in the isolation area have consented, in writing, to the location of the proposed facility.

(ii) The operator and each water source owner have agreed, in writing, that the applicant will construct and maintain at the operator's expense a permanent alternative water supply of like quantity and quality at no additional cost to the water source owner if the existing source is adversely affected by the facility.

(iii) The applicant has demonstrated that a replacement water source is technically and economically feasible and readily available for every public or private water source in the isolation area.

(15) *School, park or playground.*



(i) For a construction/demolition waste landfill permit issued on or after December 23, 2000, other than an expansion of a construction/demolition waste landfill that was permitted prior to December 23, 2000, within 300 yards of:

(A) A building which is owned by a school district or school and used for instructional purposes.

(B) A park.

(C) A playground.

(ii) The current property owner of a school, park or playground may waive the 300-yard prohibition by signing a written waiver. Upon receipt of the waiver, the Department will waive the 300-yard prohibition and will not use the prohibition as the basis for the denial of a new permit.

(16) *Obstruction.* For areas permitted on or after December 23, 2000, in a manner in which any portion of the landfill would be an obstruction to air navigation under 14 CFR 77.23(a)(5) (relating to standards for determining obstructions).

(b) Except as provided in subsection (c), this section does not apply to features that may come into existence after the date of the first newspaper notice of the filing of a permit application under § 271.141 (relating to public notice by applicant).

(c) This section does not apply to features that may come into existence after the date of the first newspaper notice under this subsection if the following apply:

(1) The person or municipality publishes a notice of intent to file an application for a construction/demolition waste landfill permit. The notice, which is separate from the newspaper notice required by § 271.141, shall be published once a week for 3 consecutive weeks in a newspaper of general circulation in the area where the facility is proposed to be located. The notice shall include a brief description of the location and proposed operation of the facility.

(2) The person or municipality files an administratively complete application under § 271.202 (relating to receipt of application and completeness review) with the Department within 1 year from the date of the first newspaper notice under this subsection.

#### Source

The provisions of this § 277.202 amended January 24, 1997, effective January 25, 1997, 27 Pa.B. 521; amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226287) to (226289).

#### Cross References

This section cited in 25 Pa. Code § 277.113 (relating to maps and related information).

### § 277.203. Certification.

(a) The operator shall submit a certification by a registered professional engineer on forms provided by the Department upon completion of each major con-

struction activity identified in the permit for each phase or sequence of construction at the facility. Major construction activities include:

- (1) Construction of groundwater monitoring system.
- (2) Construction of the subbase.
- (3) Construction of the leachate detection zone.
- (4) Construction of the liner.
- (5) Construction of the protective cover and the collection system within the protective cover.
- (6) Placement of attenuating soil at an expansion of a construction/demolition waste landfill permitted prior to December 23, 2000.
- (7) Construction of a leachate treatment facility.
- (8) Construction of a sedimentation pond.
- (9) Closure.
- (10) Final closure.
- (11) Construction of the landfill gas extraction system.

(b) The certification shall describe the construction activity and the phase or sequence of construction being certificated, using drawings and plans if appropriate. The certification shall state that the actual construction was observed by the engineer or persons under his direct supervision, and that the supervision was carried out in a manner consistent with the approved permit.

(c) Upon completion of each construction activity described in subsection (a) other than construction of any leachate treatment facility, the operator shall notify the Department that the construction activity is ready for inspection. No waste may be disposed in the area subject to the inspection until the Department has conducted an inspection and has transmitted its written approval to the permittee indicating that construction was done according to the permit.

(d) The closure and final closure activities will not be deemed complete until the Department has certified completion of closure and final closure activities.

#### Source

The provisions of this § 277.203 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226289) to (226290).

### DAILY OPERATIONS

#### § 277.211. Signs and markers.

(a) A person or municipality that operates a construction/demolition waste landfill shall identify the facility for the duration of operations by posting and maintaining a sign which is clearly visible and can be easily seen and read at the junction of each access road and public road. The sign shall be constructed of a durable, weather-resistant material. The sign shall show the name, business address and telephone number of the person who operates the facility, the operating hours of the facility and the number of the current permit authorizing operation of the facility.

(b) Permanent physical markers for the grid coordinate system and permit area markers shall:

(1) Be posted and maintained for the duration of the operations to which they pertain.

(2) Be clearly visible, readable and uniform throughout the operation.

(3) Be permanently fixed and made of a durable material.

(c) The perimeter of the site shall be clearly marked before the beginning of operations. The perimeter of a disposal area shall be clearly marked before the beginning of construction/demolition waste disposal within that area.

(d) The permanent physical markers for the grid coordinate system shall be installed at the locations set forth in the permit, prior to the beginning of operations. The base line of the grid system shall be marked with two permanent monuments that show elevation.

**Source**

The provisions of this § 277.211 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (226290).

**§ 277.212. Access control.**

(a) A gate or other barrier shall be maintained at potential vehicular access points to block unauthorized access to the site when an attendant is not on duty.

(b) The operator shall maintain a fence or other suitable barrier around the site, including impoundments, and leachate collection and treatment systems, sufficient to prevent unauthorized access.

(c) Access to the site shall be limited to times when an attendant is on duty.

**Source**

The provisions of this § 277.212 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226290) to (226291).

**Cross References**

This section cited in 25 Pa. Code § 277.133 (relating to map and grid requirements); and 25 Pa. Code § 277.135 (relating to access control plan).

**§ 277.213. Access roads.**

(a) An access road shall be designed, constructed and maintained to prevent erosion to the maximum extent possible and to prevent contributions of sediment to streams or runoff outside the site.

(b) A crossing of a perennial or intermittent stream or a wetland shall be made using bridges, culverts or similar structures. Bridges, culverts or other encroachments or water obstructions shall meet the requirements of Chapter 105 (relating to dam safety and waterway management).

(c) An access road shall have a drainage system that is compatible with the natural drainage system, structurally stable and which will pass safely the peak flow from a 25-year, 24-hour precipitation event. For roads that are used or in

existence for more than 30 days, the drainage system shall include sloped or crowned road surfaces, cross drains or culverts, stabilized ditches, erosion resistant surfacing, sediment traps and other appropriate measures as required by § 277.242 (relating to soil erosion and sedimentation control).

(d) An access road shall be paved or surfaced with asphalt, gravel, cinders or other equivalent material approved by the Department in the permit. An access road shall be capable of withstanding the load limits projected by the applicant under § 277.134 (relating to plan for access roads). The maximum sustained grade of an access road may not exceed 12%.

(e) For roads leading to the waste disposal area, a landfill shall maintain a minimum cartway width of one of the following:

(1) Twenty-two feet for two-way traffic.

(2) Twelve feet for one-way traffic with pull-off intervals every 100 yards or a greater distance where there is a clear view of approaching vehicles.

(f) An access road shall be designed, constructed and maintained to allow the orderly egress and ingress of vehicular traffic when the facility is in operation, including during inclement weather.

(g) An access road negotiable by loaded collection vehicles shall be provided from the entrance gate of the facility to unloading areas. An access road shall be provided to each treatment facility impoundment and groundwater monitoring point. Other monitoring points shall be readily accessible.

(h) Disturbed areas adjacent to a road shall be vegetated or otherwise stabilized to prevent erosion.

(i) An access road shall be maintained to control dust and to prevent or control the tracking of mud on and off the site.

#### Source

The provisions of this § 277.213 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226291) to (226292).

#### Cross References

This section cited in 25 Pa. Code § 271.111 (relating to permit application filing deadline); and 25 Pa. Code § 277.134 (relating to plan for access roads).

### § 277.214. Measurement and inspection of waste.

(a) An operator of a construction/demolition waste landfill that has received, is receiving or will receive 30,000 or more cubic yards of solid waste in a calendar year shall weigh solid waste when it is received. The scale used to weigh solid waste shall conform to 3 Pa.C.S. Chapter 41 (relating to Consolidated Weights and Measures Act) and 70 Pa. Code Part I (relating to weighmasters). The operator of the scale shall be a licensed public weighmaster under 3 Pa.C.S. Chapter 41 and 70 Pa. Code Part I.

(b) The operator shall accurately measure waste by volume or weight prior to unloading.

**Source**

The provisions of this § 277.214 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (226292).

**Cross References**

This section cited in 25 Pa. Code § 277.132 (relating to operation plan).

**§ 277.215. Equipment.**

(a) The operator shall maintain on the site equipment necessary for the operation of the facility in accordance with the permit. The equipment shall be maintained in operable condition.

(b) If a breakdown of the operator's equipment occurs, the operator shall utilize standby equipment as necessary to comply with the act, the environmental protection acts, this subchapter and its permit conditions.

**Source**

The provisions of this § 277.215 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (226292).

**Cross References**

This section cited in 25 Pa. Code § 277.132 (relating to operation plan).

**§ 277.216. Unloading and compaction.**

(a) An attendant or clearly marked signs shall direct vehicles to the unloading area.

(b) The operator shall ensure that collection vehicles unload waste promptly in unloading areas. Construction/demolition waste shall be unloaded only in unloading areas designated in the approved permit.

(c) Construction/demolition waste shall be spread and compacted in shallow layers sufficient to minimize void spaces during placement of lifts.

(d) The working face shall be kept to a size which can be easily compacted.

**Source**

The provisions of this § 277.216 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (226292).

**Cross References**

This section cited in 25 Pa. Code § 277.141 (relating to compaction and cover plan).

**§ 277.217. Air resources protection.**

(a) The operator shall implement fugitive air contaminant control measures and otherwise prevent and control air pollution under the Air Pollution Control Act (35 P. S. §§ 4001—4014), Article III (relating to air resources) and § 277.218 (relating to nuisance minimization and control). Minimization and control measures shall include the following:

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- (1) Ensuring that operation of the facility will not cause or contribute to the exceeding of ambient air quality standards under § 131.3 (relating to ambient air quality standards).
  - (2) Ensuring that no open burning occurs at the facility.
  - (3) Minimizing the generation of fugitive dust emissions from the facility.
- (b) The operator shall comply with the terms and conditions of an air quality plan approval and air quality operating permit issued to the facility under Chapter 127 (relating to construction, modification, reactivation and operation of sources).

**Source**

The provisions of this § 277.217 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (226293).

**§ 277.218. Nuisance minimization and control.**

- (a) *Vectors.* An operator may not cause or allow the attraction, harborage or breeding of vectors.
- (b) *Odors.*
  - (1) An operator shall implement the plan approved under § 277.136 (relating to nuisance minimization and control plan) to minimize and control public nuisances from odors. If the Department determines during operation of the facility that the plan is inadequate to minimize or control public nuisances, the Department may modify the plan or require the operator to modify the plan and obtain Department approval.
  - (2) An operator shall perform regular, frequent and comprehensive site inspections to evaluate the effectiveness of cover, capping, gas collection and destruction, waste acceptance and all other waste management practices in reducing the potential for offsite odor creation.
  - (3) An operator shall promptly address and correct problems and deficiencies discovered in the course of inspections performed under paragraph (2).
- (c) *Other.* An operator shall implement the plan approved under § 277.136 to minimize and control other conditions that are harmful to the environment or public health, or which create safety hazards, odors, dust, noise, unsightliness and other public nuisances.

**Source**

The provisions of this § 277.218 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (226293).

**Cross References**

This section cited in 25 Pa. Code § 277.136 (relating to nuisance control plan); and 25 Pa. Code § 277.217 (relating to air resources protection).

**§ 277.219. Recycling.**

(a) The operator shall salvage and recycle waste materials received at the facility for which recycling is cost effective, in accordance with the plan approved under § 277.138 (relating to recycling plan).

(b) Salvaging and recycling of materials may not be allowed or conducted unless salvaging and recycling is controlled by the operator to prevent interference with prompt and sanitary operations and is conducted to prevent a health hazard or nuisance.

(c) Salvaged material shall be promptly moved from the unloading area and either stored in an approved area under Chapter 285 (relating to storage, collection and transportation of municipal waste) or transported offsite.

**Source**

The provisions of this § 277.219 adopted April 8, 1988, effective April 9, 1988, 18 Pa.B. 1681; amended October 9, 1992, effective October 10, 1992, 22 Pa.B. 5105. Immediately preceding text appears at serial page (126314).

**Cross References**

This section cited in 25 Pa. Code § 277.138 (relating to recycling plan).

**§ 277.220. Litter.**

(a) The operator may not allow litter to be blown or otherwise deposited off-site.

(b) If necessary, fences or other barriers sufficient to control blowing litter shall be located in the immediate operating area downwind from the working face. Fences or other barriers shall be constructed of mesh, snow fencing or other material approved by the Department as part of the permit.

(c) At least weekly, litter shall be collected from fences, roadways, tree line barriers and other barriers, and disposed or stored in accordance with the act and the regulations thereunder, unless a greater frequency is set forth in the permit.

**Cross References**

This section cited in 25 Pa. Code § 277.137 (relating to litter control plan).

**§ 277.221. Daily volume.**

(a) A person or municipality operating a construction/demolition waste landfill may not receive solid waste at the landfill in excess of the maximum or average daily volume approved in the permit.

(b) The average daily volume is a limit on the volume of solid waste that is permitted to be received at the facility, and shall be computed quarterly by averaging the total volume received over the quarter.

**Source**

The provisions of this § 277.221 adopted December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685.

**§ 277.222. Radiation monitoring and response.**

(a) An operator shall implement the action plan approved under § 277.140 (relating to radiation protection action plan).

(b) An operator shall monitor incoming waste in accordance with the Department's *Guidance Document on Radioactivity Monitoring at Solid Waste Processing and Disposal Facilities*, Document Number 250-3100-001 or in a manner at least as protective of the environment, facility staff and public health and safety. Monitoring shall meet the requirements of this section and the facility's approved radiation protection action plan.

(c) Radiation detector elements shall be as close as practical to the waste load and in an appropriate geometry to monitor the waste. The radiation monitoring system shall be set to alarm at a level no higher than 10 microrentgen per hour ( $\mu\text{R/hr}$ ) above the average background at the facility when any of the radiation detector elements is exposed to a cesium-137 gamma radiation field. Radiation detector elements shall be shielded to maintain the average background below 10  $\mu\text{R/hr}$ . If capable of energy discrimination, the radiation monitoring system shall be set to detect gamma rays of a 50 kiloelectron volt (keV) energy and higher.

(d) An operator shall have portable radiation monitors capable of determining the radiation dose rate and presence of contamination on a vehicle that has caused an alarm. Upon a confirmed exceedance of the alarm level in subsection (c), a radiological survey of the vehicle shall be performed.

(e) An operator shall notify the Department immediately and isolate the vehicle when radiation dose rates of 20  $\mu\text{Sv/hr}$  (2 mrem/hr) or greater are detected in the cab of a vehicle, 500  $\mu\text{Sv/hr}$  (50 mrem/hr) or greater are detected from any other surface, or contamination is detected on the outside of the vehicle.

(f) Monitoring equipment shall be calibrated at a frequency specified by the manufacturer, but not less than once a year.

(g) If radioactive material is detected, the vehicle containing the radioactive material may not leave the facility without written Department approval and an authorized United States Department of Transportation exemption form.

**Source**

The provisions of this § 277.222 adopted December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685.

**COVER AND REVEGETATION****§ 277.231. [Reserved].****Source**

The provisions of this § 277.231 reserved December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (226294).



**§ 277.232. Intermediate cover and slopes.**

(a) The operator shall provide intermediate cover on lifts every 50 feet horizontally or at the end of each working week, whichever comes first, by placing a compact and uniform cover on the working face and on the side slopes. Nonfriable asbestos containing waste shall be covered within 24 hours after depositing with at least 6 inches of nonasbestos containing cover material.

(b) The composition of the intermediate cover material shall meet the following performance standards. The intermediate cover shall:

- (1) Cover solid waste after it is placed without change in its properties and without regard to weather.
- (2) Be capable of allowing loaded vehicles to successfully maneuver over it after placement.
- (3) Be capable of controlling fires.
- (4) Be consistent with the waste acceptance plan for the facility.
- (5) Stabilize the filled area.
- (6) Control infiltration of precipitation and erosion and sedimentation.
- (7) Be capable of supporting the germination and propagation of vegetative cover as required by §§ 277.234 and 277.235 (relating to revegetation; and standards for successful revegetation) unless vegetative cover is not necessary to control infiltration of precipitation and erosion and sedimentation.

(c) Unless alternative design requirements to meet the performance standards in subsection (b) are approved as part of the permit under § 271.231 (relating to equivalency review procedure), intermediate cover shall meet the following design requirements:

- (1) If soil or soil-like, be at least 12 inches in thickness.
- (2) If soil or soil-like material is used, the layer shall be uniformly graded.
- (d) A 2-week supply of cover material shall be maintained onsite.
- (e) If intermediate cover requires vegetation to meet the performance standards in subsection (b), the vegetation shall be established within 30 days.
- (f) Slopes constructed during daily landfilling activities may not exceed 50%.

**Source**

The provisions of this § 277.232 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226294) to (226295).

**Cross References**

This section cited in 25 Pa. Code § 277.141 (relating to compaction and cover plan).

**§ 277.233. Final cover and grading.**

(a) The operator shall provide final cover in the following manner:

- (1) A cap shall be placed and graded over the entire surface of each final lift. The following performance standards for the cap shall be met:

- (i) The cap shall have a permeability less than or equal to the permeability of the primary liner or a permeability no greater than  $1 \times 10^{-7}$  cm/sec, whichever is less.
  - (ii) The cap shall be resistant to physical and chemical failure.
  - (iii) The cap shall cover all areas where waste is disposed.
- (2) A drainage layer capable of transmitting flow and preventing erosion of the soil layer shall be placed over the cap.
  - (3) A uniform and compacted layer of soil at least 2 feet in thickness shall be placed over the drainage layer.
  - (4) For a construction/demolition waste landfill permitted prior to December 23, 2000, that does not have a liner, the Department may waive or modify the cap and drainage layer.
- (b) The operator shall place final cover within 1 year after disposal in the final lift ceases or as soon thereafter as weather permits, unless the Department, in the permit, allows a later period based on a demonstration that a later period is necessary to protect the final cover from differential settlement of waste at the facility. The Department will not allow a later period unless, at a minimum, delayed installation will not cause or allow a violation of this article, the act or the environmental protection acts. For a construction/demolition waste landfill constructed with attenuating soil and permitted prior to December 23, 2000, or for an expansion of a landfill under § 277.122 (relating to modification to expand existing landfill), the Department may waive the final cover requirements in subsection (a) when the approved postclosure land use makes a cap and drainage layer unnecessary.
  - (c) Unless alternative design requirements to meet the performance standards in subsection (a)(1)(i)—(iii) are approved as part of the permit under § 271.231 (relating to equivalency review procedure), the cap shall meet the design requirements set forth for caps in Table I in § 277.255 (relating to liner) which will not result in a permeability greater than that of the primary liner.
  - (d) The layer of material described in subsection (a)(3) shall meet the following performance standards. The layer shall:
    - (1) Be capable of allowing loaded vehicles to successfully maneuver over it after placement.
    - (2) Be capable of controlling fires.
    - (3) Be capable of supporting the germination and propagation of vegetative cover as required by §§ 277.234 and 277.235 (relating to revegetation; and standards for successful revegetation).
    - (4) Ensure slope stability.
  - (e) Unless alternative design requirements to meet performance standards in subsection (d) are approved as part of the permit under § 271.231 (relating to equivalency review procedure), the layer of material described in subsection (a)(3) shall meet the following design requirements:

- (1) The cover soil shall fall within the United States Department of Agriculture textural classes of sandy loam, loam, sandy clay loam, silty clay loam, loamy sand and silt loam as defined in the *Soil Survey Manual* published by the United States Department of Agriculture, Soil Conservation Service (available from the Department or the Northeast National Technical Center of the Soil Conservation Service, 160 E. 7th Street, Chester, Pennsylvania 19103-6092).
- (2) At least 40% by weight of the cover soil shall be capable of passing through a 2 millimeter, no. 10 mesh sieve.
- (f) The grade of final slopes shall be designed, installed and maintained to:
  - (1) Ensure permanent slope stability.
  - (2) Control erosion due to rapid water velocity and other factors.
  - (3) Allow compaction, seeding and revegetation of cover material placed on the slopes.
  - (4) Ensure minimal percolation of precipitation and surface runoff into the disposal area.
- (g) Unless the Department authorizes a different slope design in the permit based on a demonstration that the different design can meet the requirements of subsection (f), slopes shall be designed, installed and maintained as follows:
  - (1) The grade of the final surface of the facility may not be less than 3%.
  - (2) If the Department approves final grades of more than 15%:
    - (i) The operator shall construct a horizontal terrace at least 15 feet wide on the slope for every 25 feet maximum rise in elevations of the slope. The terrace width shall be measured as the horizontal distance between slope segments.
    - (ii) The gradient of the terrace shall be 5% into the landfill.
    - (iii) Drainage ditches shall be constructed in each horizontal terrace to convey flows.
  - (3) An operator may not leave final slopes that have a grade exceeding 33%, including slopes between benched terraces.

#### Source

The provisions of this § 277.233 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226295) to (226296) and (266309).

#### Cross References

This section cited in 25 Pa. Code § 277.113 (relating to closure plan); and 25 Pa. Code § 277.141 (relating to compaction and cover plan).

### § 277.234. Revegetation.

- (a) Vegetation shall be established on land affected by a construction/demolition waste landfill.
- (b) Revegetation shall provide for a diverse, effective and permanent vegetative cover of the same seasonal variety as vegetation native to the site and

capable of self-regeneration and plant succession at least equal in extent of cover to the natural vegetation of the area. Introduced species may be used when desirable and necessary to achieve the approved postclosure land use. Vegetative cover shall be considered of the same seasonal variety when it consists of a mixture of species that is of equal or superior utility to native vegetation during each season of the year.

(c) Revegetation shall provide a quick germinating, fast-growing vegetative cover capable of stabilizing the soil surface from erosion.

(d) Disturbed areas shall be seeded and planted when weather and planting conditions permit, but the seeding and planting of disturbed areas shall be performed during the first normal period for favorable planting after final grading.

(e) Mulch shall be applied to regraded areas where necessary to control erosion, promote germination of seeds and increase the moisture retention of the soil.

#### **Cross References**

This section cited in 25 Pa. Code § 271.113 (relating to closure plan); 25 Pa. Code § 277.142 (relating to revegetation plan); 25 Pa. Code § 277.232 (relating to intermediate cover and slopes); 25 Pa. Code § 277.233 (relating to final cover and grading); and 25 Pa. Code § 277.242 (relating to soil erosion and sedimentation control).

#### **§ 277.235. Standards for successful revegetation.**

(a) The standard for successful revegetation shall be the percent groundcover of the vegetation which exists on the site. The Department will not approve less than a minimum of 70% groundcover of permanent plant species. No more than 1% of the total area may have less than 30% groundcover. No single or contiguous area exceeding 3,000 square feet may have less than 30% groundcover.

(b) No trees, woody shrubs or deep rooted plants shall be planted or allowed to grow on the revegetated area, unless otherwise allowed by the Department in the permit based on a demonstration that roots will not penetrate the cap or drainage layer.

#### **Cross References**

This section cited in 25 Pa. Code § 271.113 (relating to closure plan); 25 Pa. Code § 277.142 (relating to revegetation plan); 25 Pa. Code § 277.232 (relating to intermediate cover and slopes); 25 Pa. Code § 277.233 (relating to final cover and grading); and 25 Pa. Code § 277.242 (relating to soil erosion and sedimentation control).

### **WATER QUALITY PROTECTION**

#### **§ 277.241. General requirements.**

(a) The operator may not cause or allow a point or nonpoint source discharge of pollution from or on the facility to surface waters of this Commonwealth.

(b) A construction/demolition waste landfill shall be operated to prevent and control surface and groundwater water pollution. An operator shall operate and maintain necessary surface and groundwater treatment facilities until surface or groundwater pollution from or on the facility has been permanently abated.

(c) The operator may not cause or allow water pollution within or outside of the site from operation of the facility.

**Source**

The provisions of this § 277.241 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (266310).

**Cross References**

This section cited in 25 Pa. Code § 277.243 (relating to sedimentation ponds).

**§ 277.242. Soil erosion and sedimentation control.**

(a) The operator shall manage surface water and control erosion and sedimentation, based on the 24-hour precipitation event in inches to be expected once in 25 years.

(b) The operator shall:

(1) Prevent or minimize surface water percolation into the waste deposited at the facility.

(2) Meet the requirements of Chapters 102 and 105 (relating to erosion and sediment control; and dam safety and waterway management).

(3) Prevent soil erosion and sedimentation to the maximum extent possible.

(c) When rills or gullies deeper than 9 inches form in areas that have been regraded and planted, the rills and gullies shall be filled, graded or otherwise stabilized and the area reseeded or replanted according to §§ 277.234 and 277.235 (relating to revegetation; and standards for successful revegetation). The Department will require that rills or gullies of lesser size be stabilized and the area reseeded or replanted if the rills or gullies are disruptive to the approved postclosure land use or may result in additional erosion and sedimentation.

**Cross References**

This section cited in 25 Pa. Code § 271.113 (relating to closure plan); 25 Pa. Code § 277.151 (relating to soil erosion and sedimentation control plan); and 25 Pa. Code § 277.213 (relating to access roads).

**§ 277.243. Sedimentation ponds.**

(a) Surface drainage from the disturbed area, including areas that have been graded, seeded or planted, shall be passed through a sedimentation pond or a series of sedimentation ponds before leaving the site. The Department may, in the permit, waive the required use of sedimentation ponds when a person or municipality demonstrates to the satisfaction of the Department that sedimentation ponds are not necessary to meet the requirements of § 277.241 (relating to general requirements).

(b) Sedimentation ponds shall be constructed, operated and maintained in accordance with this section, Chapters 102 and 105 (relating to erosion and sediment control; and dam safety and waterway management) and the minimum

design criteria contained in the United States Soil Conservation Service's Engineering Standard 378, 'Pond' Pa., as amended.

(c) Sedimentation ponds and other treatment facilities shall be maintained until removal of the ponds and facilities is approved by the Department.

(d) A pond shall include a nonclogging dewatering device approved by the Department that will permit the draining of the water from the inflow. The dewatering device may not be located at a lower elevation than the maximum elevation of the sedimentation storage volume.

(e) Ponds shall be designed, constructed and maintained to prevent short circuiting to the maximum extent possible.

(f) The design, construction and maintenance of a sediment pond in accordance with this section does not relieve the person or municipality that operates a facility of the responsibility for complying with the applicable treatment requirements and effluent limitations established under § 277.241.

(g) At a minimum, sedimentation ponds shall be capable of managing the runoff resulting from a 25-year, 24-hour precipitation event.

#### Cross References

This section cited in 25 Pa. Code § 277.151 (relating to soil erosion and sedimentation control plan).

### § 277.244. Discharge structures.

Discharges from dams, ponds, embankments, impoundments and diversions shall be controlled by energy dissipators, riprap channels or other devices when necessary to reduce erosion, to prevent deepening or enlargement of stream channels and to minimize disturbance to surface and groundwater. Discharge structures shall be designed and maintained according to standard engineering-design procedures, and shall meet the requirements of Chapter 105 (relating to dam safety and waterway management).

#### Cross References

This section cited in 25 Pa. Code § 277.151 (relating to soil erosion and sedimentation control plan).

### § 277.245. Water supply replacement.

(a) A person or municipality operating a construction/demolition waste landfill which adversely affects a water supply by degradation, pollution or other means shall restore or replace the affected water supply with an alternate source that is of like quantity and quality to the original supply at no additional cost to the owner. For purposes of this section, the term "water supply" includes existing, currently designated or currently planned sources of water or facilities or systems for the supply of water for human consumption or for agricultural, commercial, industrial or other legitimate use, including the uses protected by the applicable provisions of Chapter 93 (relating to water quality standards).

(b) A temporary water supply shall be provided as soon as practicable but not later than 48 hours after one of the following:

(1) Receipt of information showing that the operator is responsible for adversely affecting the water supply.

(2) Receipt of notice from the Department that the operator is responsible for adversely affecting the water supply.

(c) A permanent water supply shall be provided as soon as practicable but not later than 90 days after one of the following:

(1) Receipt of information showing that the operator is responsible for adversely affecting the water supply.

(2) Receipt of notice from the Department that the operator is responsible for adversely affecting the water supply.

(d) Permanent water supplies include development of a new well with a distribution system, interconnection with a public water supply or extension of a private water supply, but do not include provision of bottled water or a water tank supplied by a bulk water hauling system, which are temporary water supplies.

#### Source

The provisions of this § 277.245 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (266312).

#### Cross References

This section cited in 25 Pa. Code § 277.246 (relating to attenuating soil base); and 25 Pa. Code § 277.252 (relating to general limitations).

### § 277.246. Attenuating soil base.

(a) If the operator is not required to design, construct, operate and maintain a liner system by § 277.251 (relating to scope and requirements), no construction/demolition waste may be disposed at a construction/demolition waste landfill unless:

(1) At least 4 feet of attenuating soil exists or has been placed on the entire disposal area, or 1 foot of attenuating soil exists or has been placed for every 4 feet of waste approved by the Department in the permit, whichever is greater.

(2) At least 4 vertical feet separate the seasonal high water table, perched water table or bedrock from the lowest area where waste is deposited. Soil mottling may indicate the presence of a seasonal high water table.

(3) Drainage systems may be utilized to maintain a 4 foot isolation distance between the bottom of the subbase of the liner system and the seasonal high water table. The operator may not use a drainage system if the system is likely to adversely affect the quality or quantity of water provided by a public or private water supply, even if a replacement supply is available under § 277.245 (relating to water supply replacement). The drainage system shall be limited to drain tile, piping and french drains.

- (4) At least 8 vertical feet separate the regional groundwater table from the lowest area where waste is deposited. The regional groundwater table may not be artificially manipulated.
- (b) The attenuating soil required by this section shall meet the following requirements:
- (1) The soil shall fall within the United States Department of Agricultural textural classes of sandy loam, loam, sandy clay loam and silt loam.
  - (2) At least 40% by weight of the fragments in the soil shall be capable of passing through a 2 millimeter No. 10 mesh sieve.
  - (3) The combustible or coal content of the soil may not exceed 12% by weight.
  - (4) The soil may not include boulders or stones as classified by the latest edition of United States Department of Agriculture Handbook 18 (Soil Survey Manual).

#### Cross References

This section cited in 25 Pa. Code § 277.117 (relating to soils description).

### LINER SYSTEM

#### § 277.251. Scope and requirements.

- (a) A person or municipality operating a construction/demolition waste landfill, other than a construction/demolition waste landfill constructed with attenuating soil and permitted prior to December 23, 2000, or for an expansion of a landfill under § 277.122 (relating to modification to expand existing landfill), shall design, construct, operate and maintain a liner system for disposal areas of the facility or components thereof under this section and §§ 277.252—277.260.
- (b) The liner system shall consist of the following elements:
- (1) Subbase, which is the prepared layer of soil or earthen material upon which the remainder of the liner system is constructed.
  - (2) Leachate detection zone, which is the prepared layer placed on top of the subbase and upon which the liner is placed, and in which a leachate detection system is located.
  - (3) Liner, which is a continuous layer of remolded clay or synthetic material placed on the leachate detection zone.
  - (4) Protective cover and leachate collection zone, which is a prepared layer placed over the liner in which a leachate collection system is located.

#### Source

The provisions of this § 277.251 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226301) to (226302).



**Cross References**

This section cited in 25 Pa. Code § 277.161 (relating to liner system and leachate control plan); 25 Pa. Code § 277.164 (relating to application requirements for noncoal mine disposal); 25 Pa. Code § 277.246 (relating to attenuating soil base); and 25 Pa. Code § 277.282 (relating to number, location and depth of monitoring points).

**§ 277.252. General limitations.**

(a) The bottom of the subbase of the liner system cannot be in contact with the seasonal high water table or perched water table without the use of ground-water pumping systems.

(1) Soil mottling may indicate the presence of a seasonal high groundwater table.

(2) Drainage systems may be utilized to prevent contact between the bottom of the subbase of the liner system and the seasonal high water table or perched water table. The operator may not use a drainage system if the system is likely to adversely affect the quality or quantity of water provided by public or private water supply, even if a replacement supply is available under § 277.245 (relating to water supply replacement). The drainage system shall be limited to drain tile, piping and french drains.

(b) At least 8 feet shall be maintained between the bottom of the subbase of the liner system and the regional groundwater table in an unconfined aquifer. The regional groundwater table may not be artificially lowered.

(c) In a confined aquifer, at least 8 feet shall be maintained between the bottom of the subbase of the liner system and the top of the confining layer or the shallowest level below the bottom of the subbase where groundwater occurs as a result of upward leakage from natural or preexisting causes. The integrity of the confining layer may not be compromised by excavation.

(d) If the approved design plans provide for the placement of additional adjacent liner:

(1) Waste may not be placed within 25 feet of an edge of the liner.

(2) The edge of the liner shall be protected by soil cover, or another material approved in the permit, until additional liner is added.

(3) A lined berm at least 4 feet high shall be constructed and maintained to prevent the lateral escape of leachate.

(4) Adequate spacing shall be maintained on the inside of the berm to collect stormwater and sediment.

(e) If the approved design plans do not provide for the placement of additional adjacent liner, waste may not be placed within 15 feet of the inside top of the lined perimeter berm.

(f) A lined perimeter berm at least 4 feet high shall be constructed and maintained along the edge of the lined disposal area to prevent the lateral escape of leachate.

(g) The edge of the liner shall be clearly marked.

**Source**

The provisions of this § 277.252 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (266302) to (226303).

**Cross References**

This section cited in 25 Pa. Code § 277.161 (relating to liner system and leachate control plan); 25 Pa. Code § 277.164 (relating to application requirements for noncoal mine disposal); 25 Pa. Code § 277.251 (relating to scope and requirements); 25 Pa. Code § 277.259 (relating to noncoal mine disposal); and 25 Pa. Code § 277.271 (relating to scope).

**§ 277.253. Subbase.**

(a) The subbase shall meet the following performance standards. The subbase shall:

- (1) Bear the weight of the liner system, waste, waste cover material and equipment operating on the facility without causing or allowing a failure of the liner system.
- (2) Accommodate potential settlement without damage to the liner system.

(b) Unless alternative design requirements to meet the performance standards in subsection (a) are approved as part of the permit under § 271.231 (relating to equivalency review procedure), the subbase shall meet the following design requirements. The subbase shall:

- (1) Be at least 6 inches thick and compacted to a standard proctor density of at least 95%.
- (2) Be no more permeable than  $1 \times 10^{-5}$  cm./sec., based on laboratory and field testing unless the clay component of a composite liner is designed and constructed directly above the subbase.
- (3) Be hard, uniform, smooth and free of debris, rock, plant materials and other foreign material.
- (4) Have a postsettlement slope of at least 2% and no more than 33%.

**Source**

The provisions of this § 277.253 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (226303).

**Cross References**

This section cited in 25 Pa. Code § 277.161 (relating to liner system and leachate control plan); 25 Pa. Code § 277.164 (relating to application requirements for noncoal mine disposal); and 25 Pa. Code § 277.251 (relating to scope and requirements).

**§ 277.254. Leachate detection zone.**

(a) The leachate detection zone shall meet the following performance standards. The leachate detection zone shall:

- (1) Rapidly detect and collect liquid entering the leachate detection zone, and rapidly transmit the liquid to the leachate treatment system.
- (2) Withstand chemical attack from waste or leachate.

- (3) Withstand anticipated loads, stresses and disturbances from overlying waste, waste cover materials and equipment operation.
  - (4) Function without clogging.
  - (5) Prevent the liner from cracking, tearing, stretching or otherwise losing its physical integrity.
  - (6) Cover the bottom and sidewalls of the facility.
- (b) Unless alternative design requirements to meet the performance standards in subsection (a) are approved as part of the permit under § 271.231 (relating to equivalency review procedure), the leachate detection zone of a liner system shall meet the following design requirements:
- (1) Be at least 12 inches thick.
  - (2) Contain no material exceeding 0.5 inches in particle size.
  - (3) Create a flow zone between the subbase and the liner more permeable than  $1 \times 10^{-2}$  cm./sec. based on laboratory testing and, when required by the Department, field testing.
  - (4) Contain a perforated piping system capable of detecting and intercepting liquid within the leachate detection zone and conveying the liquid to a collection sump for storage, processing or disposal. The sump shall be separate from the leachate collection sump and shall be of a sufficient size to transmit leachate that is generated. The piping system shall also meet the following:
    - (i) The slope, size and spacing of the piping system shall assure that liquids drain from the leachate detection zone.
    - (ii) The pipes shall be installed primarily perpendicular to the flow and shall have a minimum postsettlement grade of at least 2%.
    - (iii) The minimum diameter of the perforated pipe shall be 4 inches with a wall thickness of Schedule-80 or greater as specified by ASTM or equivalent.
    - (iv) The pipes shall be cleaned and maintained as necessary.
  - (5) The leachate detection zone shall have a minimum bottom slope of 2%.
  - (6) Contain stone or aggregates without sharp edges.
- (c) The operator shall monitor the leachate detection zone weekly to determine whether liquid is flowing from the zone.
- (d) If liquid is flowing from the leachate detection zone the operator shall:
- (1) Immediately notify the Department in writing.
  - (2) Estimate, on a weekly basis, the volume of liquid flowing from the zone.
  - (3) Sample and analyze the liquid, on a quarterly basis, for pH, specific conductivity, total organic carbon and chlorides. The Department may also require sampling and analyses for other constituents expected to be found in the waste.
  - (4) Provide written copies of the flow and analysis data to the Department.
- (e) If leachate flow is greater than 100 gallons per acre of lined collection area per day or more than 10% of leachate generation, the operator shall:

- (1) Submit to the Department a plan within 30 days for locating the source of leachate in the leachate detection zone, and for determining the severity and cause of leachate penetration.
- (2) Implement the plan upon Department approval, and complete the plan in a reasonable time not to exceed 6 months.
- (3) Submit to the Department, within 45 days after completion of the plan, a report containing the new data collected, analysis of the data and recommendations concerning a remedial plan.
- (4) Conduct quarterly sampling and analysis for the parameters in § 277.284(1) (relating to sampling and analysis), and submit copies of the results of the analysis to the Department.
- (f) If sampling results indicate the presence of constituents at concentrations that could result in degradation of groundwater, the operator shall:
  - (1) Submit to the Department a remedial plan for controlling the source of leachate in the leachate detection zone, and implement the plan upon Department approval.
  - (2) Submit to the Department a permit modification application under § 271.222 (relating to permit modification) for increased groundwater monitoring, giving consideration to monitoring frequency, number of wells and other factors, and conduct increased groundwater monitoring upon Department approval of the application.

#### Source

The provisions of this § 277.254 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226304) to (226305).

#### Cross References

This section cited in 25 Pa. Code § 277.161 (relating to liner system and leachate control plan); 25 Pa. Code § 277.164 (relating to application requirements for noncoal mine disposal); 25 Pa. Code § 277.251 (relating to scope and requirements); and 25 Pa. Code § 277.282 (relating to number, location and depth of monitoring points).

### § 277.255. Liner.

- (a) The liner shall meet the following standards of performance:
  - (1) The liner shall prevent the migration of leachate through the liner to the greatest degree that is technologically possible.
  - (2) The effectiveness of the liner in preventing the migration of leachate may not be adversely affected by the physical or chemical characteristics of solid waste, solid waste constituents or leachate from the facility.
  - (3) The liner shall be resistant to physical failure, chemical failure and other failure from the sources identified under § 277.161(d) (relating to liner system and leachate control plan).
- (b) Unless alternative design requirements to meet the performance standards in subsection (a) are approved as part of the permit under § 271.231 (relating to

equivalency review procedure), the liner shall meet, at a minimum, the requirements of the table in subsection (f).

(c) A liner shall:

(1) Be no more permeable than  $1 \times 10^{-7}$  cm./sec. based on laboratory and field testing.

(2) For synthetic liners, be installed according to manufacturer's specifications under the supervision of an authorized representative of the manufacturer. An approved assurance and quality control program shall be implemented in the field during the installation of the liner.

(3) For remolded clay liners, be designed, installed and maintained according to a quality assurance and quality control plan approved by the Department.

(4) Be inspected for uniformity, damage and imperfections during construction and installation.

(d) Liners made of clay, bentonite and bentonite-like materials shall be constructed in compacted lifts not exceeding 6 inches in depth unless the operator submits data from a field demonstration validating the suitability of compacted lifts greater than 6 inches. A lift shall be scarified before placement of the next lift.

(e) The operator may design, construct, operate and maintain a composite liner.

(1) The liner shall have the following components:

(i) An upper component made of a manufactured geosynthetic liner that meets the requirements of this section independently of the composite component.

(ii) A lower component made of earthen material that meets the requirements of this section independently of the upper component.

(2) The two components of the composite liner shall be designed, constructed and maintained to provide a compression connection, or direct continuous contact, between them.

(f) A facility or a component thereof that is subject to this chapter may not have a liner based upon natural attenuation of leachate.

**TABLE I**  
**MINIMUM LINER DESIGN STANDARDS**

<i>Liner Material</i>	<i>Function</i>	<i>Minimum Field</i>		<i>Remarks</i>
		<i>Thickness (Units as Specified)</i>	<i>Liner Density (Tests as Specified)</i>	
Geosynthetic	Liner,	30 mil	NA	1. A greater thickness may be required depending upon the recommendations of the manufacturer. 2. HDPE liners shall be at least 60 mil.
	Cap	30 mil		
Natural & Remolded Clay	Liner,	2 feet	90%*	1. Minimum of 30% fines by weight less than 0.074 mm particle size (#200 sieve). 2. Plasticity index. 3. No coarse fragments greater than 3/4 inch in diameter.
	Cap	1 foot	90%*	
	Composite Component	2 feet	≥90%*	
Sodium Bentonite & Bentonite- like materials	Liner,	1 foot	≥90%*	1. Minimum of 8% powdered sodium bentonite or manufacturer's recommendations, whichever is greater. 2. No coarse fragments greater than 3/4 inch in diameter. 3. No organic matter.
	Cap	1 foot	≥90%*	
	Composite Component	1 foot	≥90%*	
Geosynthetic Clay liner (GCL)	Composite Component	N/A	N/A	Minimum of 3/4 pound of powdered or granular sodium bentonite per square foot.

\*Percentage is of maximum theoretical density when using Marshall method of design, and percentage of maximum when using Standard Proctor method of design (Pa. PTM No. 106, Method B).

#### Source

The provisions of this § 277.255 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226305) to (226307).

#### Cross References

This section cited in 25 Pa. Code § 277.161 (relating to liner system and leachate control plan); 25 Pa. Code § 277.164 (relating to application requirements for noncoal mine disposal); 25 Pa. Code § 277.233 (relating to final cover and grading); 25 Pa. Code § 277.251 (relating to scope and requirements); and 25 Pa. Code § 277.258 (relating to surface mined areas).

#### § 277.256. Protective cover.

(a) The protective cover shall meet the following performance standards. The protective cover shall:

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- (1) Protect the primary liner from physical damage from stresses and disturbances from overlying wastes, waste cover materials and equipment operation.
  - (2) Protect the leachate collection system within the protective cover from stresses and disturbances from overlying wastes, waste cover materials and equipment operation.
  - (3) Allow the continuous and free flow of leachate into the leachate collection system within the protective cover.
- (b) Unless alternative design requirements to meet the performance standards in subsection (a) are approved as part of the permit under § 271.231 (relating to equivalency review procedure), the protective cover shall meet the following design requirements. The protective cover shall be:
- (1) Comprised of clean earth material that contains no aggregate, rocks, debris, plant material or other solid material larger than 1/2 inch in diameter, and no material with sharp edges.
  - (2) As permeable as, or more permeable than,  $1 \times 10^{-2}$  cm./sec., based on field testing, and shall allow the free flow of liquids and leachate passing through or generated by solid waste.
  - (3) At least 18 inches in thickness.

#### Source

The provisions of this § 277.256 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226307) to (226308).

#### Cross References

This section cited in 25 Pa. Code § 277.161 (relating to liner system and leachate control plan); 25 Pa. Code § 277.164 (relating to additional requirements for noncoal mine disposal); and 25 Pa. Code § 277.251 (relating to scope and requirements).

### § 277.257. Leachate collection system within protective cover.

- (a) The leachate collection system within the protective cover shall meet the following performance standards. The leachate collection system shall:
- (1) Ensure that free flowing liquids and leachate will drain continuously from the protective cover to the leachate treatment system without ponding or accumulating on the liner.
  - (2) Ensure that the depth of leachate on or above the primary liner does not exceed 1 foot.
  - (3) Withstand chemical attack from leachate.
  - (4) Withstand anticipated loads, stresses and disturbances from overlying waste, waste cover materials and equipment operation.
  - (5) Function without clogging.
  - (6) Cover the bottom and sidewalls of the facility.
- (b) Unless alternative design requirements to the performance standards in subsection (a) are approved as part of the permit under § 271.231 (relating to

equivalency review procedure), the leachate collection system within the protective cover shall comply with the following design requirements:

- (1) The leachate collection system shall include a perforated piping system which is capable of intercepting free flowing liquids and leachate within the protective cover and conveying them to a collection sump for storage, processing or disposal. The collection sump shall be of sufficient size to transmit leachate that is generated and shall be capable of automatic and continuous functioning.
- (2) The perforated piping system shall be sloped, sized and spaced to assure that free flowing liquids and leachate will drain continuously from the protective cover to the collection sump point.
- (3) The minimum diameter of the perforated pipes shall be 6 inches with a wall thickness of Schedule 80 or greater as specified by ASTM, or equivalent.
- (4) The leachate collection system shall contain stones or aggregates.
- (5) The pipes shall be installed primarily perpendicular to the flow and shall have a postsettlement grade of at least 2%.
- (6) The leachate collection system shall be cleaned and maintained as necessary.
- (7) The leachate collection system shall have a minimum bottom slope of 2%.

#### Source

The provisions of this § 277.257 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226308) to (226309).

#### Cross References

This section cited in 25 Pa. Code § 277.161 (relating to liner system and leachate control plan); 25 Pa. Code § 277.164 (relating to application requirements for noncoal mine disposal); 25 Pa. Code § 277.251 (relating to scope and requirements); and 25 Pa. Code § 277.282 (relating to number, location and depth of monitoring points).

### § 277.258. Surface mined areas.

(a) For construction/demolition waste landfills in surface mined areas in which the disposal area abuts a highwall, the operator shall design, construct and maintain a barrier between the highwall and the disposal area that meets the following performance standards:

- (1) The barrier shall prevent the lateral migration of leachate from the disposal area.
- (2) The effectiveness of the barrier in preventing the lateral migration of leachate may not be adversely affected by solid waste, solid waste constituents or leachate from the facility.
- (3) The barrier shall meet the requirements of § 277.291(a) (relating to mineral resources).



(b) Unless alternative design requirements to meet the performance standards in subsection (a) are approved as part of the permit under § 271.231 (relating to equivalency review procedure), the barrier shall meet the following design requirements. The barrier shall be:

(1) Twelve horizontal feet in thickness.

(2) No more permeable than  $1 \times 10^{-7}$  cm./sec. based on laboratory and field testing.

(3) Made of clay as specified in Table I to § 277.255 (relating to liner).

(c) The barrier shall be designed, installed and maintained according to a quality assurance and quality control plan approved by the Department.

(d) The barrier shall be inspected for uniformity, damage and imperfections during construction and installation.

#### Cross References

This section cited in 25 Pa. Code § 277.161 (relating to liner system and leachate control plan); 25 Pa. Code § 277.164 (relating to application requirements for noncoal mine disposal); and 25 Pa. Code § 277.251 (relating to scope and requirements).

### § 277.259. Noncoal mine disposal.

(a) Notwithstanding the provisions of § 277.252 (relating to general limitations) relating to disposal above the seasonal highwater table, perched water table and regional groundwater table, the Department may issue a permit for an expansion of a construction/demolition waste landfill in an abandoned noncoal mine permitted prior to December 23, 2000.

(b) In addition to other applicable requirements, a person or municipality that operates a construction/demolition waste landfill in an abandoned noncoal mine shall:

(1) Pump and treat leachate and groundwater from the facility, and treat the leachate and groundwater to the extent required by The Clean Streams Law (35 P. S. §§ 691.1—691.1001) and regulations thereunder, until the leachate and the facility are no longer capable of causing surface water or groundwater pollution.

(2) Minimize the inflow of surface water and groundwater to the facility, including measures such as grouting of fractures or fault zones.

(3) Use and maintain collection piping, wetwell and pumps that have a safety factor of 2, and provide redundant piping and pumping systems.

(4) Use daily cover materials that will preclude the perching of leachate and lateral channeling within the landfill.

(5) Restore the site of its approximate original contour.

(6) Not operate the landfill in a limestone or carbonate rock quarry.

(7) Comply with the applicable provisions of the Noncoal Surface Mining and Conservation Act (52 P. S. §§ 3301—3326).

**Source**

The provisions of this § 277.259 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (226310).

**Cross References**

This section cited in 25 Pa. Code § 277.161 (relating to liner system and leachate control plan); 25 Pa. Code § 277.164 (relating to application requirements for noncoal mine disposal); and 25 Pa. Code § 277.251 (relating to scope and requirements).

**§ 277.260. Initial placement of solid waste.**

The first 8 feet of solid waste placed on the protective cover may not contain material capable of penetrating or puncturing the protective cover.

**Cross References**

This section cited in 25 Pa. Code § 277.161 (relating to liner system and leachate control plan); 25 Pa. Code § 277.164 (relating to application requirements for noncoal mine disposal); and 25 Pa. Code § 277.251 (relating to scope and requirements).

**LEACHATE TREATMENT****§ 277.271. Scope.**

(a) A person or municipality shall comply with this section and §§ 273.271—273.276 (relating to leachate treatment) if the person or municipality:

(1) Receives a permit to operate a construction/demolition waste landfill after April 9, 1988, including a permit that results in the expansion of a facility permitted before April 9, 1988.

(2) Received a permit to operate a construction/demolition waste landfill before April 9, 1988, for which a liner system is required under § 277.252 (relating to general limitations).

(b) A person or municipality operating a construction/demolition waste landfill on April 9, 1988, that is not subject to subsection (a), but which is required by The Clean Streams Law (35 P. S. §§ 691.1—691.1001) and regulations thereunder to treat leachate, shall comply with this section and §§ 277.272—277.276 (relating to basic treatment methods; leachate transportation; leachate recirculation; leachate collection and storage; and leachate analysis and sludge handling) to the greatest extent practicable.

**Cross References**

This section cited in 25 Pa. Code § 271.113 (relating to closure plan); and 25 Pa. Code § 277.162 (relating to leachate treatment plan).

**§ 277.272. Basic treatment methods.**

(a) Except as otherwise provided in this section, leachate shall be collected and handled by direct discharge into a permitted publicly owned treatment works, following pretreatment, if pretreatment is required by Federal, State or local law or by discharge into another permitted treatment facility.

(b) Leachate may be collected and handled by onsite treatment and discharge into a receiving stream under a permit issued by the Department under The Clean Streams Law (35 P. S. §§ 691.1—691.1001) and regulations thereunder, if the Department approves this method in a construction/demolition waste landfill permit. This method will not be allowed unless, at a minimum, direct discharge into a publicly-owned treatment works or other permitted treatment facility is not practicable.

(c) Leachate may be collected and handled by spray irrigation following treatment. This method will not be allowed unless, at a minimum:

- (1) Discharge into a publicly-owned treatment works or other permitted treatment facility is not practicable.
- (2) Discharge of treated leachate into a receiving stream in a manner consistent with The Clean Streams Law and regulations thereunder is not attainable.
- (3) Spray irrigation will not cause groundwater pollution.

#### Source

The provisions of this § 277.272 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226311) to (226312).

#### Cross References

This section cited in 25 Pa. Code § 271.113 (relating to closure plan); 25 Pa. Code § 277.162 (relating to leachate treatment plan); 25 Pa. Code § 277.163 (relating to modifications in leachate treatment plan); 25 Pa. Code § 277.271 (relating to scope); 25 Pa. Code § 277.273 (relating to leachate transportation); and 25 Pa. Code § 277.274 (relating to leachate recirculation).

### § 277.273. Leachate transportation.

(a) For the first 3 years following initial discharge of leachate into the collection and handling system, leachate may be handled by vehicular transportation to, and leachate treatment at, an offsite treatment facility. Except as provided in § 277.163 (relating to modifications in leachate treatment plan) the operator shall operate a leachate collection and treatment facility under § 277.272 (relating to basic treatment methods) within 3 years following the detection of leachate in the collection or handling system.

(b) Vehicular transportation of leachate to an offsite treatment facility will not be allowed unless the following requirements are met:

- (1) Prior to the disposal of waste at the facility, the operator has in place at the site a permitted and fully operational system for fully pretreating the leachate in accordance with applicable pretreatment requirements of the primary and backup offsite treatment facilities.
- (2) One of the following applies:
  - (i) Direct discharge into a publicly-owned treatment works or other permitted treatment facility is attainable within 3 years.

(ii) Discharge of treated leachate into a receiving stream in a manner consistent with The Clean Streams Law (35 P. S. §§ 691.1—691.1001) and regulations thereunder is attainable within 3 years.

(3) A leachate recirculation system under § 277.274 (relating to leachate recirculation) is constructed and fully approved.

(4) The landfill operator has a valid contract for the treatment of leachate at an offsite treatment facility for up to 3 years. The contract shall prohibit the treatment facility operator from refusing to treat leachate without 6 months' advance written notice to the landfill operator.

(5) The offsite treatment facility to which leachate would be transported is operating in compliance with The Clean Streams Law and regulations thereunder, and is otherwise capable of accepting and treating leachate from the landfill.

(c) If a person or municipality using vehicular transportation to, and treatment at, an offsite treatment facility loses the ability to dispose of leachate at the facility and is unable to secure an alternate offsite treatment facility acceptable to the Department within 15 days from loss of its approved treatment facility, implementation of the treatment plan required by § 277.272 shall begin immediately.

(d) If the operator cannot immediately implement a treatment plan under § 277.272 to comply with this article, The Clean Streams Law and regulations thereunder, and cannot locate an alternative offsite treatment facility within 15 days, the operator shall cease accepting waste at the facility for storage, processing or disposal. Cessation shall continue until the operator obtains an acceptable means of treating its leachate.

(e) Notwithstanding other provisions of this subchapter, the operator shall have in place at the site a permitted and fully operational system for treating leachate at least 3 full years before closure of the facility.

#### **Cross References**

This section cited in 25 Pa. Code § 271.113 (relating to closure plan); 25 Pa. Code § 277.162 (relating to leachate treatment plan); 25 Pa. Code § 277.163 (relating to modifications in leachate treatment plan); 25 Pa. Code § 277.271 (relating to scope); and 25 Pa. Code § 277.274 (relating to leachate recirculation).

#### **§ 277.274. Leachate recirculation.**

In conjunction with the treatment methods in §§ 277.272 and 277.273 (relating to basic treatment methods; and leachate transportation) recirculation of leachate may be utilized if the following conditions exist:

(1) The area subject to leachate recirculation previously has been filled with solid waste.

(2) There is sufficient municipal waste capacity to absorb the leachate.

(3) The area subject to leachate recirculation is underlain by a leachate collection system.

- (4) The leachate recirculation is conducted with an approved piping system located under the intermediate cover, and causes no odors, runoff or ponding.
- (5) The leachate is not a hazardous waste.

#### Source

The provisions of this § 277.274 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (255077).

#### Cross References

This section cited in 25 Pa. Code § 271.113 (relating to closure plan); 25 Pa. Code § 277.162 (relating to leachate treatment plan); 25 Pa. Code § 277.271 (relating to scope); and 25 Pa. Code § 277.273 (relating to leachate transportation).

### § 277.275. Leachate collection and storage.

(a) Impoundments or tanks for storing leachate before or during treatment shall be constructed under §§ 285.122—285.124 (relating to storage tanks; impoundments—general; and impoundments—failure).

(b) An onsite leachate storage system shall be part of each leachate treatment method used by the operator. The storage system shall contain impoundments or tanks for storage of leachate. The tanks or impoundments shall have sufficient storage capacity at least equal to the maximum expected production of leachate for any 30-day period for the life of the facility estimated under § 277.162 (relating to leachate treatment plan) or 250,000 gallons, whichever is greater. No more than 25% of the total leachate storage capacity may be used for flow equalization on a regular basis.

(c) The impoundments or tanks shall be aerated as necessary to prevent and control odors. Impoundments or tanks shall each have a capacity of at least 250,000 gallons, unless otherwise approved by the Department.

(d) The storage capacity of impoundments and tanks at a site shall be increased if additional storage is required prior to each major phase of construction and as otherwise necessary.

(e) Leachate storage capacity may not be considered to include leachate that may have collected in or on the liner system.

(f) Necessary collection and containment systems shall be installed prior to the deposition of solid waste at the site. A leachate treatment or handling system approved by the Department under § 277.162 shall be installed or ready for use prior to the storage or disposal of solid waste at the site.

(g) For a facility permitted after December 23, 2000, underground pipes used for the transport of leachate from the liner system to the leachate storage impoundments or tanks shall be equipped with secondary containment or comply with § 245.445 (relating to methods for release detection for piping). Secondary containment shall be designed, constructed and installed to direct any release to an area that can be inspected for leaks.

**Source**

The provisions of this § 277.275 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (255077) to (255078).

**Cross References**

This section cited in 25 Pa. Code § 271.113 (relating to closure plan); 25 Pa. Code § 277.162 (relating to leachate treatment plan); and 25 Pa. Code § 277.271 (relating to scope).

**§ 277.276. Leachate analysis and sludge handling.**

(a) Upon commencement of leachate flow from the facility, the operator shall sample and analyze the following:

(1) On a daily basis, the average flow rate and volume of leachate flowing from the landfill into the leachate storage and treatment system.

(2) On a quarterly basis, the chemical composition of leachate flowing into the leachate treatment system. The analysis shall be sufficient to determine the impact of leachate on the liner system, the effectiveness of the leachate treatment system, the need for modification of the groundwater monitoring system or the effluent limitations in an NPDES permit and the actual characteristics of leachate from the waste disposed at the facility. For the purpose of this quarterly analysis, the leachate sample shall be collected from the influent storage tank or impoundment and shall be representative of the average mixed influent quality.

(b) Sludges resulting from the treatment of leachate may be disposed at the facility if the sludges are not hazardous under Article VII (relating to hazardous waste management).

**Source**

The provisions of this § 277.276 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (255078).

**Cross References**

This section cited in 25 Pa. Code § 271.113 (relating to closure plan); 25 Pa. Code § 277.162 (relating to leachate treatment plan); and 25 Pa. Code § 277.271 (relating to scope).

**§ 277.277. Departmental notice and remedial action.**

The operator shall immediately notify the Department and describe remedial steps to be taken whenever:

(1) Operation of the treatment facility in accordance with the approved plan cannot prevent violation of the terms of its permits, The Clean Streams Law (35 P. S. §§ 691.1—691.1001) or the regulations thereunder.

(2) The facility is generating a quality or quantity of leachate that exceeds the design capacity of the onsite pretreatment or treatment system.

(3) The contractual agreement for leachate treatment by an offsite treatment system is breached or expired.

(4) The quality or quantity of waste being disposed at the site changes from that set forth in the permit.

**Source**

The provisions of this § 277.277 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (226315).

**Cross References**

This section cited in 25 Pa. Code § 271.113 (relating to closure plan); and 25 Pa. Code § 277.163 (relating to modifications in leachate treatment plan).

**WATER QUALITY MONITORING****§ 277.281. General requirements.**

(a) A person or municipality that operates a construction/demolition waste landfill shall install, operate and maintain a monitoring system that can detect the entry of solid waste, solid waste constituents, leachate, contaminants or constituents of decomposition into the groundwater or surface water. The monitoring system shall comply with this section and §§ 277.282—277.288.

(b) A person or municipality may not construct, install or use a monitoring system for a construction/demolition waste landfill until that system has first been approved by the Department, in writing.

**Source**

The provisions of this § 277.281 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (226315).

**Cross References**

This section cited in 25 Pa. Code § 271.113 (relating to closure plan); 25 Pa. Code § 277.116 (relating to groundwater quality description); and 25 Pa. Code § 277.152 (relating to water quality monitoring plan).

**§ 277.282. Number, location and depth of monitoring points.**

(a) The water quality monitoring system shall accurately characterize groundwater flows, groundwater chemistry and flow systems on the site and adjacent area. The system shall consist, at a minimum, of the following:

(1) At least one monitoring well at a point hydraulically upgradient from the disposal area in the direction of increasing static head that is capable of providing representative data of groundwater not affected by the facility, except when the facility occupies the most upgradient position in the flow system. In that case, sufficient downgradient monitoring wells shall be placed to determine the extent of adverse effects on groundwater from the facility.

(2) At least three monitoring wells at points hydraulically downgradient in the direction of decreasing static head from the area in which solid waste has been or will be disposed. In addition to three downgradient wells, the Department may allow one or more springs for monitoring points if the springs are hydraulically downgradient from the area in which solid waste has been or will

be disposed, if the springs are developed and protected in a manner approved by the Department, and if the springs otherwise meet the requirements of this subchapter.

(3) A leachate detection system for the disposal area, when it is required by §§ 277.251 and 277.254 (relating to scope and requirements; and leachate detection zone).

(4) A leachate collection system for the disposal area, when it is required by § 277.251 and § 277.257 (relating to leachate collection system within protective cover).

(5) Surface water monitoring points approved by the Department.

(b) The upgradient and downgradient monitoring wells shall be:

(1) Sufficient in number, location and depth to be representative of water quality.

(2) Located so as not to interfere with routine facility operations.

(3) Located within 200 feet of the permitted disposal area and located at the points of compliance.

(c) In addition to the requirements of subsection (b), upgradient monitoring wells shall be located so that they will not be affected by adverse effect on groundwater from the disposal area.

(d) In addition to the requirements of subsection (b), downgradient monitoring wells shall be located so that they will provide early detection of adverse effect on groundwater from the disposal area.

(e) Wells drilled under this section shall be drilled by drillers licensed under the Water Well Drillers License Act (32 P. S. §§ 645.1—645.13).

(f) The well materials shall be decontaminated prior to installation.

#### Source

The provisions of this § 277.282 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226315) to (226316).

#### Cross References

This section cited in 25 Pa. Code § 271.113 (relating to closure plan); 25 Pa. Code § 277.116 (relating to groundwater quality description); 25 Pa. Code § 277.152 (relating to water quality monitoring plan); 25 Pa. Code § 277.281 (relating to general requirements); 25 Pa. Code § 277.286 (relating to groundwater assessment plan); and 25 Pa. Code § 277.312 (relating to annual operation report).

### § 277.283. Standards for wells and casing of wells.

(a) A monitoring well shall be constructed with a screen that meets the following requirements:

(1) The screen shall be factory-made.

(2) The screen may not react with the groundwater being monitored.

(3) The screen shall maximize open area to minimize entrance velocities and allow rapid sample recovery.



(b) A monitoring well shall be filter-packed with chemically inert clean quartz sand, silica or glass beads. The material shall be well-rounded and dimensionally stable.

(c) A monitoring well shall be cased as follows:

(1) The casing shall maintain the integrity of the monitoring well borehole and shall be constructed of material that will not react with the groundwater being monitored.

(2) The minimum casing diameter shall be 4 inches unless otherwise approved by the Department in writing.

(3) The casing shall protrude at least 1 foot aboveground, unless otherwise approved by the Department, and shall be clearly visible.

(4) The casing shall be designed and constructed in a manner that prevents cross contamination between surface water and groundwater.

(5) The annular space above the sampling depth shall be sealed to prevent contamination of samples and the groundwater.

(6) If plastic casing is used, it shall be threaded and gasket sealed to preclude potential sample contamination from solvent welded joints, unless otherwise provided by the Department in the permit.

(7) Alternative casing designs for wells in stable formations may be approved by the Department.

(d) A monitoring well casing shall be enclosed in a protective casing that shall:

(1) Be of sufficient strength to protect the well from damage by heavy equipment and vandalism.

(2) Be installed for at least the upper 10 feet of the monitoring well, as measured from the well cap with a maximum stick up of 3 feet, unless otherwise approved by the Department in writing.

(3) Be grouted and placed with a cement collar at least 3 feet deep to hold it firmly in position.

(4) Be numbered for identification with a label capable of withstanding field conditions and painted in a highly visible color.

(5) Protrude above the monitoring well casing.

(6) Have a locked cap.

(7) Be made of steel or other material of equivalent strength.

#### Source

The provisions of this § 277.283 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226316) to (226317).

#### Cross References

This section cited in 25 Pa. Code § 271.113 (relating to closure plan); 25 Pa. Code § 277.116 (relating to groundwater quality description); 25 Pa. Code § 277.152 (relating to water quality monitoring plan); 25 Pa. Code § 277.281 (relating to general requirements); and 25 Pa. Code § 277.286 (relating to groundwater assessment plan).

**§ 277.284. Sampling and analysis.**

A person or municipality operating a construction/demolition waste landfill shall conduct sampling and analysis from each monitoring point for the following parameters at the following frequencies:

- (1) Quarterly, for chloride, sulfate, chemical oxygen demand, pH, specific conductance, total organic carbon, total organic halogen, iron and sodium, and, if required by the Department, for other constituents found in the waste received at the facility.
- (2) Quarterly, for groundwater elevations in monitoring wells recorded as a distance from the elevation at the well head referenced to mean sea level based on United States Geological Survey datum.

**Source**

The provisions of this § 277.284 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (226317).

**Cross References**

This section cited in 25 Pa. Code § 271.113 (relating to closure plan); 25 Pa. Code § 277.152 (relating to water quality monitoring plan); 25 Pa. Code § 277.254 (relating to leachate detection zone); 25 Pa. Code § 277.281 (relating to general requirements); and 25 Pa. Code § 277.322 (relating to closure).

**§ 277.285. Reporting of analysis results.**

Analyses of data required by this subchapter shall be submitted on a form provided by the Department within 60 days of sampling or 15 days after completion of analyses, whichever is sooner, unless the Department approves another time period in the permit.

**Cross References**

This section cited in 25 Pa. Code § 271.113 (relating to closure plan); 25 Pa. Code § 277.152 (relating to water quality monitoring plan); and 25 Pa. Code § 277.281 (relating to general requirements).

**§ 277.286. Groundwater assessment plan.**

(a) *Requirement.* A person or municipality operating a construction/demolition waste landfill shall prepare and submit to the Department a groundwater assessment plan within 60 days after one of the following occurs:

- (1) Data obtained from monitoring by the Department or the operator indicates groundwater degradation at a monitoring point.
- (2) Laboratory analysis of one or more public or private water supplies shows the presence of degradation that could reasonably be attributed to the facility.

(b) *Exceptions.* The operator is not required to conduct an assessment under this section if one of the following applies:

- (1) Within 10 working days after receipt of sample results showing groundwater degradation the operator resamples the affected wells and analysis from resampling shows to the Department's satisfaction that groundwater degradation has not occurred.
- (2) Within 20 working days after receipt of sample results indicating groundwater degradation, the operator demonstrates that the degradation was caused entirely by earthmoving and other activities related to facility construction, or by seasonal variations.
- (c) The groundwater assessment plan shall specify the manner in which the operator will determine the existence, quality, quantity, aerial extent and depth of groundwater degradation, and the rate and direction of migration of contaminants in the groundwater. A groundwater assessment plan shall be prepared by an expert in the field of hydrogeology. The plan shall contain, at a minimum, the following information:
  - (1) The number, location, size, casing type and depth of wells, lysimeters, borings, pits, piezometers and other assessment structures or devices to be used. If the operator establishes compliance points as part of the assessment, the points shall be wells constructed in accordance with §§ 277.282 and 277.283 (relating to number, location and depth of monitoring points; and standards for wells and casing of wells).
  - (2) Sampling and analytical methods for the parameters to be evaluated.
  - (3) Evaluation procedures, including the use of previously gathered groundwater quality information, to determine the concentration, rate and extent of groundwater degradation from the facility.
  - (4) An implementation schedule.
  - (5) Identification of the abatement standard that will be met.
- (d) The groundwater assessment plan shall be implemented upon approval by the Department under the approved implementation schedule, and shall be completed in a reasonable time not to exceed 6 months unless otherwise approved by the Department. If the Department determines that the proposed plan is inadequate, it may modify the plan and approve the plan as modified. The operator shall notify, in writing, each owner of a private or public water supply located within 1/2-mile downgradient of the disposal area that an assessment has been initiated.
- (e) Within 45 days after the completion of the groundwater assessment plan, the operator shall submit a report containing the new data collected, analysis of the data and recommendations on the necessity for abatement.
- (f) If the Department determines after review of the groundwater assessment report that implementation of an abatement plan is not required by § 277.287 (relating to abatement plan), the operator shall submit a permit modification application under § 271.222 (relating to permit modification) for necessary changes to the groundwater monitoring plan. The operator shall implement the modifications within 30 days of the Department's approval.

(g) This section does not prevent the Department from requiring, or the operator from conducting, groundwater abatement or water supply replacement concurrently with, or prior to, implementation of the assessment.

**Source**

The provisions of this § 277.286 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226318) to (226319).

**Cross References**

This section cited in 25 Pa. Code § 271.113 (relating to closure plan); 25 Pa. Code § 277.152 (relating to water quality monitoring plan); 25 Pa. Code § 277.281 (relating to general requirements); and 25 Pa. Code § 277.287 (relating to abatement plan).

**§ 277.287. Abatement plan.**

(a) The operator of a construction/demolition waste landfill shall prepare and submit to the Department an abatement plan whenever one of the following occurs:

(1) The groundwater assessment plan prepared and implemented under § 277.286 (relating to groundwater assessment plan) shows the presence of groundwater degradation at one or more monitoring wells and the analysis under § 277.286(c) indicates that an abatement standard under subsection (d) will not be met.

(2) Monitoring by the Department or operator shows the presence of an abatement standard exceedance from one or more compliance points as indicated in subsection (d), even if a groundwater assessment plan has not been completed. The operator is not required to implement an abatement plan under this paragraph if the following are met:

(i) Within 10 days after receipt of sample results showing an exceedance of an abatement standard, at a point of compliance described in subsection (d), the operator resamples the affected wells.

(ii) Analysis from resampling shows to the Department's satisfaction that an exceedance of an abatement standard has not occurred.

(b) An abatement plan shall be prepared by an expert hydrogeologist and submitted to the Department. The plan shall contain the following information:

(1) The specific methods or techniques to be used to abate groundwater pollution from the facility.

(2) The specific methods or techniques to be used to prevent further groundwater pollution from the facility.

(c) The abatement plan shall be completed and submitted to the Department for approval within 90 days of the time the obligation arises under this section unless the date is otherwise modified, in writing, by the Department.

(d) If abatement is required in accordance with subsection (a), the operator shall demonstrate compliance with one of the following abatement standards at and beyond 150 meters of the perimeter of the permitted disposal area or at and beyond the property boundary, whichever is closer:

- (1) For constituents for which an MCL has been promulgated under the Federal Safe Drinking Water Act or the Pennsylvania Safe Drinking Water Act (42 U.S.C.A. §§ 300f—300j-18; and 35 P. S. §§ 721.1—721.17), the MCL for that constituent.
- (2) For constituents for which MCLs have not been promulgated, the background standard for the constituent.
- (3) For constituents for which the background standard is higher than the MCL or risk-based standard identified under paragraph (4), the background standard.
- (4) For constituents for which no MCLs have been established, the risk-based standard if the following conditions are met:
  - (i) The risk assessment used to establish the standard assumes that human receptors exist at the property boundary.
  - (ii) The level is derived in a manner consistent with Department guidelines for assessing the health risks of environmental pollutants.
  - (iii) The level is based on scientifically valid studies conducted in accordance with good laboratory practice standards (40 CFR Part 792 (relating to good laboratory practice standards)) promulgated under the Toxic Substances Control Act (15 U.S.C.A. §§ 2601—2692) or other scientifically valid studies approved by the Department.
  - (iv) For carcinogens, the level represents a concentration associated with an excess lifetime cancer risk level of  $1.0 \times 10^{-5}$  at the property boundary.
  - (v) For systemic toxicants, the level represents a concentration to which the human population (including sensitive subgroups) could be exposed on a daily basis that is likely to be without appreciable risk of deleterious effects during a lifetime. For purposes of this subparagraph, systemic toxicants include toxic chemicals that cause effects other than cancer or mutation.
- (e) Within 60 days of approval by the Department, the operator shall commence implementation of the plan, under the approved implementation schedule. If the Department determines that the proposed plan is inadequate, it may modify the plan and approve the plan as modified.
- (f) The abatement plan shall be continued until the Department states in writing, based on monitoring by the Department and the operator, that groundwater pollution from the facility has been permanently abated.

#### Source

The provisions of this § 277.287 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (226319) to (226320).

#### Cross References

This section cited in 25 Pa. Code § 271.113 (relating to closure plan); 25 Pa. Code § 277.152 (relating to water quality monitoring plan); 25 Pa. Code § 277.281 (relating to general requirements); and 25 Pa. Code § 277.286 (relating to groundwater assessment plan).

**§ 277.288. Recordkeeping.**

A person or municipality subject to this subchapter shall retain records of analyses and evaluations of monitoring data and groundwater elevations required under this subchapter until release of the bond and shall make the records available to the Department upon request.

**Cross References**

This section cited in 25 Pa. Code § 271.113 (relating to closure plan); 25 Pa. Code § 277.152 (relating to water quality monitoring plan); and 25 Pa. Code § 277.281 (relating to general requirements).

**MINERALS AND GAS****§ 277.291. Mineral resources.**

(a) The operator shall isolate coal seams, coal outcrops and coal refuse from waste deposits in a manner that prevents the combustion of the waste and that prevents damage to the liner system.

(b) Mine openings within the site shall be sealed in a manner approved by the Department.

(c) The operator shall implement a plan for controlling potential for damage from subsidence that was submitted and approved under § 277.120 (relating to mineral deposits information).

**Source**

The provisions of this § 277.291 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (226320).

**Cross References**

This section cited in 25 Pa. Code § 277.258 (relating to surface mined areas).

**§ 277.292. Gas control and monitoring.**

If the waste disposed at the facility generates or is likely to generate gas, the operator shall establish and implement a gas control and monitoring program approved under § 277.171 (relating to gas monitoring and recovery plan).

**Source**

The provisions of this § 277.292 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (226320).

**EMERGENCY PROCEDURES****§ 277.301. Hazard prevention.**

Construction/demolition waste landfills shall be designed, constructed, maintained and operated to prevent and minimize the potential for fire, explosion or release of solid waste constituents to the air, water or soil of this Commonwealth that could threaten public health or safety, public welfare or the environment.

**Source**

The provisions of this § 277.301 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (238983).

**Cross References**

This section cited in 25 Pa. Code § 277.181 (relating to contingency plan).

**§ 277.302. Emergency equipment.**

(a) Except as provided in subsection (b), the operator shall have available in proper working condition, the following equipment at the immediate operating area of the facility:

(1) An internal communications or alarm system capable of providing immediate emergency instruction by voice or signal to facility personnel.

(2) A communications system capable of summoning emergency assistance from local police, fire departments, emergency medical services and from State and local emergency response agencies.

(3) Portable fire extinguishers, fire control equipment, spill control equipment and decontamination equipment. For fire control equipment requiring water, the facility shall have a water supply of adequate quantity and pressure to supply the equipment.

(4) Portable gas explosimeters and gas monitoring equipment.

(b) The Department may waive or modify one or more of the requirements of subsection (a) in the permit if the operator demonstrates to the Department's satisfaction in the permit application that the requirements are not necessary to protect public health and safety, public welfare and the environment.

(c) Equipment and material required by this section shall be tested and maintained so that it is operable in time of emergency.

(d) Adequate space shall be maintained to allow the unobstructed movement of emergency personnel and equipment to operating areas of the facility.

**Source**

The provisions of this § 277.302 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (238983).

**Cross References**

This section cited in 25 Pa. Code § 277.181 (relating to contingency plan).

**§ 277.303. Implementation of contingency plan.**

(a) The operator of the facility shall immediately implement the applicable provisions of the approved contingency plan whenever there is an emergency. For purposes of this section, the term "emergency" includes a fire or spill or other event that threatens public health and safety, public welfare or the environment and personal injury.

(b) During an emergency, the operator shall:

- (1) Assess actual or potential hazards to public health and safety, public welfare and the environment that are occurring or may occur.
- (2) Ensure that fires, spills or other hazards do not occur, reoccur or spread to other solid waste at the facility.
- (3) Immediately telephone the Department and county emergency management agency, and report the following information:
  - (i) The name of the person reporting the incident and telephone number where that person can be reached.
  - (ii) The name, address and permit number of the facility.
  - (iii) The date, time and location of the emergency.
  - (iv) A brief description of the nature of the emergency, the type and quantity of the solid waste involved and what dangers to public health and safety, public welfare and the environment exist or may occur.
  - (v) The nature of injuries.
  - (vi) The parts of the contingency plan being implemented to alleviate the emergency.
- (c) After an emergency, the operator of the facility shall do the following:
  - (1) Clean up the area affected by the emergency and treat, store or dispose of recovered solid waste, contaminated soil, contaminated water or other material in a manner approved by the Department.
  - (2) Prevent disposal, processing, storage or treatment of solid waste in the area affected by the emergency until the operator has cleaned up the area, and the Department has inspected and approved the resumption of operation after the cleanup.

#### Source

The provisions of this § 277.303 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (238983) to (238984).

#### Cross References

This section cited in 25 Pa. Code § 277.181 (relating to contingency plan).

### RECORDKEEPING AND REPORTING

#### § 277.311. Daily operational records.

- (a) The operator of a facility shall make and maintain an operational record for each day that construction/demolition waste is received, processed or disposed, and for each day that construction, monitoring or postclosure activity occurs.
- (b) The daily operational record shall include the following:
  - (1) The type and weight or volume of the solid waste received.
  - (2) The county in which the solid waste originated, or if the waste originated outside of this Commonwealth, the state.
  - (3) The transporters of the solid waste.

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(4) The particular grid location of the area currently being used for disposal of solid waste.

(5) A description of waste handling problems or emergency disposal activities.

(6) A record of deviations from the approved design or operational plans.

(7) A record of activities for which entries are needed in order to comply with the annual operation report required in § 277.312 (relating to annual operation report).

(8) A record of actions taken to correct violations of the act, the environmental protection acts and this title.

(9) A record of the rejected waste loads and the reasons for rejecting the loads.

(10) A record of each incident in which radioactive material is detected in waste loads. The record shall include:

(i) The date, time and location of the occurrence.

(ii) A brief narrative description of the occurrence.

(iii) Specific information on the origin of the material, if known.

(iv) A description of the radioactive material involved, if known.

(v) The name, address and telephone numbers of the supplier or handler of the radioactive material and the name of the driver.

(vi) The final disposition of the material.

(11) A record of each vehicle, other than a combination, that exceeds 73,280 pounds gross weight and of each combination that exceeds 80,000 pounds gross weight.

(i) The record shall include:

(A) The gross weight of the vehicle when weighed at the facility.

(B) The registration plate number and home or base state registration of the vehicle.

(C) The name, business address and telephone number of the owner of the vehicle.

(D) The date and time when the vehicle was weighed at the facility.

(E) The date that the weight scale was last tested in accordance with 3 Pa.C.S. Chapter 41 (relating to the Consolidated Weights and Measures Act).

(ii) For purposes of this paragraph, the following words and terms have the following meanings unless the content clearly indicates otherwise:

*Combination*—Two or more vehicles physically interconnected in tandem. An example of a combination is a truck tractor attached to a semi-trailer.

*Gross weight*—The combined weight of a vehicle or combination of vehicles and its load, excluding the driver's weight.

*Registration*—The authority for a vehicle to operate on a highway as evidenced by the issuance of an identifying card and plate or plates.

(c) The operator shall maintain accurate operational records sufficient to determine whether construction/demolition waste is being stored under Chapter 285, Subchapter A (relating to storage of municipal waste).

(d) Daily operational records shall be retained for the life of the facility bond, or longer if determined by the Department to be necessary to meet the standards of the environmental protection acts. These records shall be made available to the Department upon request.

#### Authority

The provisions of this § 277.311 amended under the Solid Waste Management Act (35 P. S. §§ 6018.101—6018.1003); the Municipal Waste Planning, Recycling and Waste Reduction Act (53 P. S. §§ 4000.101—4000.1904); The Clean Streams Law (35 P. S. §§ 691.1—691.1001); and the Infectious and Chemotherapeutic Waste Law (35 P. S. §§ 6019.1—6019.6).

#### Source

The provisions of this § 277.311 amended November 28, 1997, effective November 29, 1997, 27 Pa.B. 6190; amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (238984) to (238985).

### § 277.312. Annual operation report.

(a) An operator shall submit to the Department an annual operation report on or before June 30 of each year.

(b) The annual operation report, which shall be submitted on a form supplied by the Department, shall include the following:

(1) A topographic survey map of the same scale, contour interval and grid system as the original site plans showing the following:

(i) Contours at the beginning and the end of the year.

(ii) The completed areas of the site as well as areas partially filled but not active during the previous year.

(2) A description of capacity used in the previous year and remaining permitted capacity.

(3) A description of the acreage used for disposal, the acreage seeded, the acreage that has been vegetated, the acreage where vegetation is permanently established and a narrative of the operator's progress in implementing the closure plan.

(4) A current certificate of insurance as specified in § 271.374(a) (relating to proof of insurance coverage), evidencing continuous coverage for public liability insurance as required by § 271.371 (relating to insurance requirement).

(5) Changes in the previous year concerning the information required by §§ 271.124 and 271.125 (relating to identification of interests; and compliance information). The report shall state if no changes have occurred.

(6) A change in the ownership of the land upon which the facility is located or a change in a lease agreement for the use of the land that may affect or alter the operator's rights upon the lands.

(7) A written update of the total bond liability for the facility under § 271.331 (relating to bond and trust amount determination). If additional bond is determined to be necessary, it shall be submitted to the Department within 90 days after the annual report is due.

(8) Certification that the operator has received all analyses required by § 287.54 (relating to chemical analysis of waste) for each type of residual waste or special handling waste received at the facility during the calendar year.

(9) A record of detected radioactive materials.

(c) The annual operation report shall be accompanied by a nonrefundable annual permit administration fee of \$2,800 in the form of a check payable to the "Commonwealth of Pennsylvania."

(d) The report shall include an evaluation of whether the monitoring plan implemented under this subchapter needs to be revised to comply with § 277.282 (relating to number, location and depth of monitoring points) because of changes in groundwater elevation or other reasons. If this evaluation determines that changes in the approved groundwater monitoring plan are necessary, the operator shall immediately notify the Department and submit an application for permit modification under § 271.222 (relating to permit modification) for necessary changes in the monitoring plan.

#### Source

The provisions of this § 277.312 adopted April 8, 1988, effective April 9, 1988, 18 Pa. B. 1681; amended July 2, 1992, effective July 4, 1992, 22 Pa. B. 3389; amended November 28, 1997, effective November 29, 1997, 27 Pa.B. 6190; amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial pages (238985) to (238986).

#### Cross References

This section cited in 25 Pa. Code § 277.311 (relating to daily operational records).

### CLOSURE PROVISIONS

#### § 277.321. Postclosure land use.

The operator shall implement the postclosure land use plan approved by the Department under § 277.191 (relating to postclosure land use plan).

#### § 277.322. Closure.

(a) The operator shall implement the closure plan approved by the Department under § 277.192 (relating to closure plan).

(b) At least 180 days before implementation of a closure plan the operator shall review its approved closure plan to determine whether the plan requires modification, and shall submit proposed changes to the Department for approval under § 271.222 (relating to permit modification).

(c) If groundwater degradation exists at closure or occurs after closure, a person shall meet one of the following:

(1) Continue to implement an approved abatement plan.

(2) Submit an application for a closure plan modification in accordance with the procedures for a major permit modification. The operator shall select one or more remediation standards that will be met in accordance with the final closure certification requirements in § 271.342 (relating to final closure certification).

(d) An application for a closure plan modification shall include the following:

(1) Technical information and supporting documentation identifying the remediation activities that will be conducted to meet and maintain the remediation standards.

(2) If a remedy relies on access to or use of properties owned by third parties, for remediation or monitoring, documentation of cooperation or agreement.

(e) After closure, the Department may modify, in accordance with § 271.144 (relating to public notice and public hearings for permit modifications), the frequency of monitoring for a parameter for which quarterly monitoring is required under § 277.284 (relating to sampling and analysis) to a semiannual frequency if the operator demonstrates the following:

(1) The parameter has not caused or contributed to groundwater degradation.

(2) Based upon the characteristics of the waste at the facility and the performance of the liner system, the parameter is unlikely to cause or contribute to groundwater degradation in the future.

(f) The Department may modify the frequency of monitoring for a parameter for which semiannual monitoring was approved under subsection (e) to an annual basis if the results of semiannual monitoring continue to demonstrate the following:

(1) The parameter has not caused or contributed to groundwater degradation.

(2) Based upon the characteristics of the waste at the facility and the performance of the liner system, the parameter is unlikely to cause or contribute to groundwater degradation in the future.

(g) The Department may reinstate the requirement of quarterly monitoring for any parameter monitored under subsection (e) or (f) if the Department has reason to believe that the parameter may cause or contribute to groundwater degradation.

**Source**

The provisions of this § 277.322 amended December 22, 2000, effective December 23, 2000, 30 Pa.B. 6685. Immediately preceding text appears at serial page (238987).

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