

Construction and Demolition Debris Land Disposal Facility (CDL) Rule

This document is a preliminary draft issued in conjunction with the July 28, 2025, Request for Comments (RFC). **This language is not the final rule language and is subject to further changes.** Formal comments on the preliminary draft should be submitted as described in the RFC. The MPCA will consider all comments, make appropriate changes, and proceed with the next phase of rule development – public noticing rule language with the accompanying statement of need and reasonableness. Information on this rulemaking, including how to sign up to receive future notices, is available at <https://www.pca.state.mn.us/get-engaged/construction-and-demolition-debris-landfills>

READER NOTES

- ~~Hard strikeouts indicate existing text the MPCA is considering deleting.~~
- Underlined text indicates new text the MPCA is considering.
- Headnotes are descriptions that function as guides to the reader. They are not enforceable.
- Term changes to conform to the formatting practices of the MN Office of the Revisor of Statutes (ORS) without change to original intent:
 - Replace “ground water” with “groundwater” where use is grammatically correct
 - Replace “shall” with “must”
- Renumbering:
 - 7035.0300, subp. 20a, is renumbered 7035.0300, subp. 20d
 - 7035.0300, subp. 43a, is renumbered 7035.0300, subp. 43d
 - 7035.0300, subp. 62b is renumbered 7035.0300, subp. 62d
- Repealers:
 - Parts 7035.0300, subpart 31 and 7035.2825 are repealed.

Summary for Minn R. 7001.3050: This rule revision eliminates the demolition debris land disposal permit-by-rule.

7001.3050 PERMIT REQUIREMENTS.

[For text of subparts 1 and 2, see Minnesota Rules]

Subp. 3. **Permits-by-rule.** The owner or operator of a facility described in items A to H is deemed to have obtained a solid waste management facility permit without making application for it.

A. A transfer facility where all waste is managed and stored in containers or roll-off boxes constructed of impervious material or in a fully enclosed building that meets the standards in part 7035.2870, subpart 4, or where the commissioner has determined that the current design is adequate as provided in part 7035.2870, subpart 3, provided that in either case:

- (1) no more than 120 cubic yards of waste are stored on site at any given time;
- (2) no more than 120 cubic yards of waste are managed on site per day;
- (3) the owner or operator maintains the facility in compliance with part 7035.2870, subpart 5; and

(4) the owner or operator submits a written notice to the commissioner that includes the facility location, responsible party and telephone number, facility size, copies of the plans and schedules required under part 7035.2525, subpart 2, item H, and type of waste no later than 180 days following the effective date of this part for existing facilities and no later than ten working days before accepting waste for new facilities. Thereafter, new and existing facilities must submit the notice required under this unit every ten years.

For the purposes of this item, "site" includes all property contiguous to the property where the containers or building are located that is controlled by the same person or related business entities. For the purposes of this item, source-separated recyclable materials received at the facility and stored on site do not count ~~towards~~ toward the volume limitations in subitems (1) and (2), and recyclable materials recovered from the waste on the site and stored on site do not count ~~towards~~ toward the volume limitations in subitem (1).

~~B. Demolition debris land disposal facilities designed for less than 15,000 cubic yards total capacity and operating less than a total of 12 consecutive months, not located adjacent to another demolition debris permit by rule facility, and in compliance with parts 7035.2525 to 7035.2655, 7035.2825, and 7035.2855.~~

~~E. B. Compost facilities receiving yard waste only and in compliance with part 7035.2836, subparts 2 and 3.~~

~~D. C. Recycling facilities in compliance with part 7035.2845.~~

~~E. D. Energy recovery facilities governed by chapters 7007, 7009, and 7011, except that facilities processing refuse-derived fuel on-site prior to incineration and energy recovery at the site, must be permitted in accordance with parts 7001.0010 to 7001.0210 and 7001.3000 to 7001.3550.~~

~~F. E. Storage sites for non-sludge wood waste generated from the wood preparation phase prior to processing or water treatment lime sludge and in compliance with part 7035.2855.~~

~~G. F. Facilities receiving solid waste from the exploration, mining, milling, smelting, and refining of ores and minerals provided that:~~

~~(1) the owner or operator does not accept waste for storage, processing, or disposal other than solid waste generated from the exploration, mining, milling, smelting, and refining of ores and minerals;~~

~~(2) the owner or operator has obtained a permit in accordance with part 7001.0020, item D; and~~

~~(3) the owner or operator is operating the facility in compliance with chapter 6130.~~

~~H. G. Facilities receiving five tons or less of municipal solid waste combustor ash for the purpose of researching in a laboratory ash treatment or utilization provided that ash is stored in compliance with part 7035.2855 and disposed of in compliance with part 7035.2885 or used in accordance with agency approvals, and provided that the facility owner or operator notifies the commissioner of the source and quantity of ash and the proposed method for managing the ash after research is complete; notification must also include a description of the research methods and intent, and must be received by the commissioner before ash is received at the facility.~~

[For text of subpart 4, see Minnesota Rules]

Summary for Minn R. 7001.3111: This rule revision eliminates the exemption of C&D facilities from the additional general siting requirements.

7001.3111 ADDITIONAL SITING REQUIREMENTS FOR CERTAIN LANDFILLS THAT HAVE DID NOT RECEIVED RECEIVE A PERMIT BEFORE JANUARY 1, 2011.

Subpart 1. **Applicability.** In addition to the requirements of this chapter and chapter 7035, after January 1, 2011, an applicant for a solid waste land disposal facility permit that is not a contiguous expansion of a permitted facility or a noncontiguous expansion within 600 yards of a permitted facility must demonstrate to the commissioner that the facility meets the additional requirements of this part, ~~unless that facility will accept only demolition and construction debris and incidental packaging or that facility will accept only industrial waste that is limited to wood, concrete, porcelain fixtures, shingles, or window glass resulting from the manufacture of building materials.~~

Subp. 2. **Site evaluation.** The applicant must comply with parts 7001.3175, 7001.3200, and 7001.3275. Construction and demolition debris land disposal facilities are exempt from compliance with part 7001.3175 item E.

[For text of subpart 3, see Minnesota Rules]

Summary for Minn R. 7001.3200: This rule revision requires C&D facilities to conduct a Preliminary Site Evaluation Report following the requirements of proposed Minn. R. 7035.2830.

7001.3200 PRELIMINARY SITE EVALUATION REPORT.

The preliminary site evaluation report must contain a statement of the land disposal capacity needed, as determined under Minnesota Statutes, sections 115A.917 and 473.823. The report must contain a description of the site selection process, stating how candidate sites were chosen, how and by whom they were evaluated, and the basis for eliminating potential sites from consideration. For the site or sites recommended for detailed evaluation, the report must contain preliminary evaluations of the following conditions, accompanied by supporting technical documentation:

A. the site's geology, ground water occurrence, horizontal and vertical directions and rates of ground water movement, and ground water quality, based on the preliminary review of available hydrogeologic maps and references, air photography, logs of previous borings and wells, and other available information required under part 7035.2815, subpart 3, item E for a mixed municipal solid waste land disposal facility; or part 7035.2830 subpart 5, item F for a construction and demolition debris land disposal facility;

[For text of item B, see Minnesota Rules]

C. the feasibility of the ground water monitoring required under part 7035.2815, subpart 10 for a mixed municipal solid waste land disposal facility; or part 7035.2830 subpart 12 for a construction and demolition debris land disposal facility;

[For text of item D, see Minnesota Rules]

E. the site's ability to meet the location standards of parts 7035.2555 and 7035.2815, subpart 2 for a mixed municipal solid waste land disposal facility; or part 7035.2830, subpart 4 for a construction and demolition debris land disposal facility;

F. the availability of sufficient land for the buffer area and the setback from the property line required under part 7035.2815, subparts 2 and 5 for a mixed municipal solid waste land disposal facility and part 7035.2830, subparts 4 and 7 for a construction and demolition debris land disposal facility, and for the designation of a compliance boundary surrounding the facility as required under part 7035.2815, subpart 4 for a mixed municipal solid waste land disposal facility, or part 7035.2830, subpart 6 for a construction and demolition debris land disposal facility;

G. the availability of suitable materials for the liners and cover required under part 7035.2815, subparts 6 and 7 for a mixed municipal solid waste land disposal facility; or part 7035.2830, subparts 8 and 9 for a construction and demolition debris land disposal facility;

[For text of items H and I, see Minnesota Rules]

Summary for Minn R. 7001.3275: This rule revision requires all C&D facilities to conduct a Detailed Site Evaluation Report, including a hydrogeologic evaluation, following the requirements of proposed Minn. R. 7035.2830.

7001.3275 DETAILED SITE EVALUATION REPORT.

Subpart 1. **Scope.**

A. The applicant ~~shall~~ must submit four copies of a detailed site evaluation report for all mixed municipal solid waste land disposal facilities in a format specified by the commissioner. The report must include the information required in subparts 2 to 8 ~~and~~ along with supporting documentation. The report must discuss whether the site meets the requirements of part 7035.2815.

B. The applicant ~~shall~~ must submit four copies of a detailed site evaluation report for all municipal solid waste combustor ash land disposal facilities. The report must include the information required in subparts 2 to 8 with the exception of subpart 4, item D, along with supporting documentation. The report must discuss whether the site meets the requirements of part 7035.2885.

C. The applicant must submit a detailed site evaluation report for all construction and demolition debris land disposal facilities in a format specified by the commissioner. The report must include the information required in subparts 2 to 8 with the exception of subpart 4, item D, along with supporting documentation. The report must discuss whether the site meets the requirements of part 7035.2830.

Subp. 2. **Hydrogeologic evaluation.** The applicant must conduct a hydrogeologic investigation to define the soil, bedrock, and ground water conditions at the site. The investigation must meet the requirements of ~~part 7035.2815, subpart 3, items A to I. A hydrogeologic evaluation must meet the requirements of part 7035.2815, subpart 3, item C, subitems (1) to (8):~~

A. part 7035.2815, subpart 3, for a mixed municipal solid waste land disposal facility;

B. part 7035.2885, subpart 7, for a municipal solid waste combustor ash land disposal facility; and

C. part 7035.2830, subpart 5, item J, for a construction and demolition debris land disposal facility.

A hydrogeologic evaluation must meet the requirements of part 7035.2815, subpart 3, item G, subitems (1) to (8), or part 7035.2830, subpart 5, item K, as applicable.

Subp. 3. **Soils for cover and liner construction.** The applicant must evaluate the availability and suitability of soil for cover and liner construction. This evaluation must include a description of the source and quantity of the soil, soil descriptions and unified classifications, particle size analyses, permeability at specified moisture and densities, Atterberg limits, and, for liner materials, cation exchange capacity. ~~The determination cover and liner evaluations must consist of be based on the evaluations required in~~ part 7035.2815, subpart 8. The evaluation must assess whether the available soils will meet the requirements of:

A. part 7035.2815, subparts 6 and 7, for a mixed municipal solid waste land disposal facility; and;

B. ~~part 7001.2885~~ 7035.2885, subparts 10 and 11, for a municipal solid waste combustor ash land disposal facility; or

C. part 7035.2830, subparts 8 and 9, for a construction and demolition debris land disposal facility.

[For text of subpart 4, see Minnesota Rules]

Subp. 5. **Proposed compliance boundary.** The detailed site evaluation report must propose the location and configuration of a compliance boundary meeting the requirements of part 7035.2815, subpart 4, for a mixed municipal solid waste land disposal facility and a municipal solid waste combustor ash land disposal facility, or part 7035.2830, subpart 6, for a construction and demolition debris land disposal facility. A plan sheet must show the locations of the proposed monitoring points; the proposed compliance boundary; the proposed limits of the waste fill and leachate management system; the property lines; ground water flow directions; and any nearby surface waters. The applicant may use a single plan sheet for these requirements and those of subpart 4, item C, if all the required information can be clearly shown.

Subp. 6. **Feasibility of corrective action.** The detailed site evaluation report must discuss the feasibility of the owner or operator implementing corrective actions in accordance with items A to D.

A. The applicant must determine whether it is technically feasible to take the corrective actions required in parts 7035.2615; ~~and~~ 7035.2815, subpart 15 for a mixed municipal solid waste land disposal and a municipal solid waste combustor ash land disposal facility; or parts 7035.2615 and 7035.2830, subpart 17 for a construction and demolition debris land disposal facility, at the proposed site. The applicant also must consider the costs of corrective actions at the site and the time available for corrective action based on ground water flow conditions at the site.

B. The applicant must identify and describe the potential modes of failure or evidence of failure, including:

[For text of subitems (1) and (2), see Minnesota Rules]

(3) gas concentrations exceeding the limits given in part 7035.2815, subpart 11 for a mixed municipal solid waste land disposal facility and a municipal solid waste combustor ash land disposal facility, or part 7035.2830, subpart 13, for a construction and demolition debris land disposal facility, in gas monitoring points, or other evidence of adverse effects of gas migration, including damage to the facility's cover vegetation.

[For text of items C and D, see Minnesota Rules]

Subp. 7. **Final use.** The detailed site evaluation report must include a proposal for the use of the site after closure consistent with part 7035.2815, subpart 16 for a mixed municipal solid waste land disposal facility and a municipal solid waste combustor ash land disposal facility; or part 7035.2830, subpart 18 for a construction and demolition land disposal facility.

[For text of subpart 8, see Minnesota Rules]

Summary for Minn R. 7001.3425: This rule revision updates the requirements for final application information for construction and demolition land disposal facilities, and is largely consistent with Minn. R. 7001.3475. This rule revision also includes a requirement for phase development and construction sequence plans which identifies the sequential construction, filling, and closure of each landfill cell and phase, and the order in which major design features will be implemented.

7001.3425 FINAL APPLICATION INFORMATION REQUIREMENTS FOR CONSTRUCTION AND DEMOLITION DEBRIS LAND DISPOSAL FACILITIES.

Subpart 1. Requirements. The application for a construction and demolition debris land disposal facility permit must include the following information in addition to the information required by part 7001.3300:

- A. a calculation of site capacity and operating life;
- B. ~~the detailed plans and engineer's report specifying the manner in which the facility will be constructed and operated to control run-on and run-off;~~
- C. a description of the procedures to be used in controlling the wind dispersion of particulate matter and fugitive dust;
- D. ~~a phase development plan showing the progressive development of trench or area fills and the construction associated with each phase;~~
- E. a cross-section plan with a vertical scale of one inch equals ten feet and a horizontal scale of one inch equals 100 feet, including a minimum of two cross-sections per phase, perpendicular to one another, showing the existing grades, the excavation grade, the final grade, the water table profile, and the profile and identity of the bedrock, as applicable;
- F. a complete soils evaluation, including individual boring logs, as required in part 7035.2825;
- G. ~~a hydrogeologic study completed in accordance with parts 7001.3275 and 7035.2825, the extent of which will be determined by the commissioner based on the location, proposed operational practices, and the types of waste expected;~~
- H. ~~the methods to be followed to control noise and access to the facility;~~
- I. ~~a list of the equipment to be used at the site including the model, capacity, number, and ability to handle bulky items;~~
- J. a description of the proposed ground water monitoring system required by part 7035.2825, subpart 12;
- K. a listing of any other permits required for the facility;
- L. an inspection procedure for the facility operator to determine that only permitted wastes are received at the facility; and

~~M. any additional information the commissioner determines to be necessary to meet the requirements of parts 7035.2525 to 7035.2805 and 7035.2825.~~

~~B. a description of the waste types to be handled at the facility, including any special handling procedures and areas designated for disposal of particular wastes;~~

~~C. a description of the status of the Environmental Assessment Worksheet or Environmental Impact Statement;~~

~~D. detailed plans and an engineering report, according to subpart 2, that describe how the applicant will design, construct, operate, and maintain the facility to comply with parts 7035.2525 to 7035.2805 and 7035.2830;~~

~~E. geologic and hydrogeologic information necessary to demonstrate compliance with part 7035.2830, as submitted in the report for the hydrogeologic evaluation required in part 7001.3275;~~

~~F. an operation and maintenance manual detailing the procedures site personnel will follow to comply with parts 7035.2525 to 7035.2805 and 7035.2830;~~

~~G. a description of how the applicant will inspect the facility, including the liner and cover systems, to meet the requirements of part 7035.2830. The applicant must include this information in the inspection plan submitted under part 7001.3300, item D;~~

~~H. detailed plans and an engineering report describing the final cover applied to each cell at closure under parts 7035.2525 to 7035.2805 and 7035.2830 and a description of how the applicant will maintain and monitor the facility after closure under parts 7035.2525 to 7035.2805 and 7035.2830. The applicant must include this information in the closure and postclosure care plans submitted under part 7001.3300, item J; and~~

~~I. The proposed gas monitoring, collection, and treatment system required in part 7035.2830, subpart 13, if a system is required based on the waste types to be handled at the facility.~~

Subpart 2. Plans and engineering report. The plans and engineering report under subpart 1, item D, must:

~~A. include the design specifications, materials and test data, the rationale for the design, and identification of elements critical to the performance of the design; and~~

~~B. address the following, as specified in part 7035.2830:~~

~~(1) the liner system, leak detection, and the leachate collection and removal system;~~
~~(2) control of run-off and run-on;~~
~~(3) management of collection, conveyance, and holding facilities associated with run-off and run-on control systems;~~

~~(4) control of wind dispersion of particulate matter;~~

~~(5) the frequency in which vegetated areas are mowed or maintained to control vegetation as to not penetrate or compromise the integrity of intermediate or final cover systems;~~

~~(6) treatment of collected run-off, run-on, and leachate;~~

~~(7) a phase development plan consistent with site capacity including two cross-sections per cell within a fill phase with a vertical scale of one inch equals ten feet and a horizontal scale of one inch equals 100 feet, perpendicular to one another, showing the existing grade, the excavation grade, the final grade, the water table profile, and the profile and identity of the~~

underlying geology in accordance with the requirements of part 7035.2830. The phase development plan must identify the volume of waste and cover material for each cell; and (8) a construction sequence plan which identifies the sequential construction, filling, and closure of each cell and phase, and identifies the order in which liner, final cover, monitoring network, leachate collection, or any other components of any containment system will be installed. The plan must also identify the largest area expected to be open without final cover. Areas without final cover must be minimized to achieve final waste elevations and complete closure as rapidly as possible to reduce leachate generation. The plan must include measures to reduce leachate generation, including temporary soil or synthetic covers. Phasing and cell sizes must be planned so that the largest area at final elevation without final cover is no more than ten acres.

Summary for Minn. R. 7035.0300: This rule revision adds or modifies definitions such as phase, custodial care, custodial care status, construction debris, and industrial solid waste for clarification.

7035.0300 DEFINITIONS.

[For text of subparts 1 to 9a, see Minnesota Rules]

Subp. 10. **Cell.** "Cell" means compacted solid waste that is enclosed by cover material in a land disposal site. A cell is a discrete area that is part of a phase.

[For text of subparts 11, see Minnesota Rules]

Subp. 12. **Closure.** "Closure" means actions to prevent or minimize the threat to public health and the environment posed by a closed facility including removing contaminated equipment, removing liners, applying final cover, grading and seeding final cover, installing monitoring devices, constructing ground water and surface water diversion structures, and installing gas control systems management, as necessary.

[For text of subpart 13 to 17, see Minnesota Rules]

Subp. 18. **Compliance boundary.** "Compliance boundary" means the planar surface that circumscribes the permitted waste boundary, lies between the permitted waste boundary and the property boundary, extends vertically downward from the land surface, and constitutes the place at which compliance with agency ground water quality standards ~~is~~ are measured.

[For text of subparts 19 to 20a, see Minnesota Rules]

Subp. 20b. **Construction and demolition debris land disposal facility.** "Construction and demolition debris land disposal facility" means a site that is used to dispose of construction debris and demolition debris in or on the land, and that may also accept industrial solid waste for disposal according to part 7035.2830.

Subp. 20c. **Construction debris.** "Construction debris" means waste building materials, packaging, and rubble resulting from construction, remodeling, repair, and demolition of buildings and roads.

[For text of Subpart 21 to 28, see Minnesota Rules]

Subp. 28a. **Custodial care.** "Custodial care" means actions taken for the care, maintenance, and monitoring of final covers, liners, or any other components of any containment system at a solid waste land disposal facility to ensure the landfill continues not to pose a threat to human

health and the environment after the commissioner approves termination of the postclosure care period.

Subp. 28b. Custodial care status. “Custodial care status” means a solid waste land disposal facility that has received commissioner approval to terminate the postclosure care period.

[For text of subparts 29 and 30, see Minnesota Rules]

Subp. 31. [See repealer.]

[For text of subparts 31a to 41, see Minnesota Rules]

Subp. 42. Ground water; groundwater Groundwater. “Ground water” or “groundwater” “Groundwater” has the meaning given for groundwater in Minnesota Statutes, section 115.01, subdivision 6.

[For text of subparts 43 to 43a, see Minnesota Rules]

Subp. 43b. Health-based value. “Health-based value” means a concentration of a chemical determined by the Department of Health to pose little or no risk to human health.

Subp. 43c. Health risk limits. “Health risk limits” has the meaning given under Minnesota Statutes, section 103H.005, subdivision 3.

[For text of subpart 44, see Minnesota Rules]

Subp. 45. Industrial solid waste. "Industrial solid waste" means all solid waste generated from an industrial or manufacturing process and solid waste generated from nonmanufacturing activities such as service and commercial establishments. Industrial solid waste does not include office materials, restaurant and food preparation waste, discarded machinery, construction debris, demolition debris, municipal solid waste combustor ash, or household refuse.

Subp. 46. Industrial solid waste land disposal facility. "Industrial solid waste land disposal facility" means a site that is used to dispose of industrial solid waste in or on the land and where only industrial solid waste is accepted for disposal.

[For text of subpart 47 to 79b, see Minnesota Rules]

Subp. 79c. Phase. “Phase” when used in reference to the construction sequencing of a landfill means a discrete area of a land disposal facility that has been designated to facilitate the systematic construction, operation, and closure of the land disposal facility. A phase is made up of one or more cells.

[For text of subparts 80 to 93, see Minnesota Rules]

Subp. 93a. [Renumbered subp ~~93c~~ 93d]

Subp. 93b. Residuals. As applied to source-separated organic material compost facilities, "residuals" means organic materials that require further composting due to their large size, such as tree branches.

Subp. 93c. Risk Assessment Advice. “Risk Assessment Advice” means technical guidance concerning exposures and risks to human health determined by the Minnesota Department of Health to assist in evaluating potential health risks to humans from exposures to a chemical.

Subp. 93d. Rolling data set. "Rolling data set" means a set of data, such as test results, which represents a specified period of time; at a specified frequency the data set changes to include more recent data and exclude data which are older than the beginning of the specified time period.

[For text of subparts 94 to 96a, see Minnesota Rules]

Subp. 97. Septage. “Septage” has the meaning given it in part ~~7080.0020~~, subpart ~~317080.1100~~, subpart 69.

[For text of subparts 98 to 121, see Minnesota Rules]

Summary for Minn. R. 7035.0605: This rule is a new part to accommodate standard engineering references.

7035.0605 AVAILABILITY OF REFERENCES.

[For text of items A to J, see Minnesota Rules]

K. The following standards of the American Society for Testing and Materials (ASTM) are incorporated by reference, are not subject to frequent change, and are available through the Minitex interlibrary loan system:

(1) ASTM D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)) (2021 and as subsequently amended);

(2) ASTM D854 Standard Test Methods for Specific Gravity of Soil Solids by the Water Displacement Method (2023 and as subsequently amended);

(3) ASTM D1140 Standard Test Methods for Determining the Amount of Material Finer than 75µm (No. 200) Sieve in Soils by Sashing (2017 and as subsequently amended);

(4) ASTM D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)) (2021 and as subsequently amended);

(5) ASTM D1586 Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils (2018);

(6) ASTM D1587 Standard Practice for Thin-Walled Tube Sampling of Fine-Grained Soils for Geotechnical Purposes (2014);

(7) ASTM D2166 Standard Test Method for Unconfined Compressive Strength of Cohesive Soil (2024 and as subsequently amended);

(8) ASTM D2216 Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass (2019 and as subsequently amended);

(9) ASTM D2434 Standard Test Methods for Measurement of Hydraulic Conductivity of Coarse-Grained Soils (2022 and as subsequently amended);

(10) ASTM D2435 Standard Test Methods for One-Dimensional Consolidation Properties of Soils Using Incremental Loading (2022 and as subsequently amended);

(11) ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System) (2025 and as subsequently amended);

(12) ASTM D2488 Standard Practice for Description and Identification of Soils (Visual-Manual Procedures) (2017);

(13) ASTM D2850 Standard Test Method for Unconsolidated-Undrained Triaxial Compression Test on Cohesive Soils (2023);

(14) ASTM D3550 Standard Practice for Thick Wall, Ring-Lined, Split Barrel, Drive Sampling of Soils (2017);

(15) ASTM D4220 Standard Practices for Preserving and Transporting Soil Samples (2015);

(16) ASTM D4318 Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils (2017);

(17) ASTM D4943 Standard Test Method for Shrinkage Factors of Cohesive Soils by the Water Submersion Method (2024 and as subsequently amended);

(18) ASTM D6282 Standard Guide for Direct Push Soil Sampling for Environmental Site Characterizations (2015);

(19) ASTM D6913 Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis (2017);

(20) ASTM D7002 Standard Practice for Electrical Leak Location on Exposed Geomembranes Using the Water Puddle Method (2022 and as subsequently amended);

(21) ASTM D7007 Standard Practices for Electrical Methods for Locating Leaks in Geomembranes Covered with Water or Earthen Materials (2024 and as subsequently amended);

(22) ASTM D7240 Standard Practice for Electrical Leak Location Using Geomembranes with an Insulating Layer in Intimate Contact with a Conductive Layer via Electrical Capacitance Technique (Conductive-Backed Geomembrane Spark Test) (2018 and as subsequently amended);

(23) ASTM D7703 Standard Practice for Electrical Leak Location on Exposed Geomembranes Using the Water Lance Method (2022 and as subsequently amended);

(24) ASTM D7928 Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis (2021 and as subsequently amended);

(25) ASTM D7953 Standard Practice for Electrical Leak Location on Exposed Geomembranes Using the Arc Testing Method (2020 and as subsequently amended); and

(26) ASTM D8265 Standard Practices for Electrical Methods for Mapping Leaks in Installed Geomembranes (2023 and as subsequently amended).

L. Methods of Soil Analysis, 3rd edition, Klute, Arnold et al. Soil Science Society of America (1994) is incorporated by reference, is not subject to frequent change, and is available through the Minitex interlibrary loan system.

M. EPA Hydrologic Evaluation of Landfill Performance (HELP) Model is incorporated by reference, is not subject to frequent change, and is available online at <https://www.epa.gov/land-research/hydrologic-evaluation-landfill-performance-help-model>.

N. Lining of Waste Impoundment and Disposal Facilities, SW-870, March 1983, issued by the United States Environmental Protection Agency, is incorporated by reference. The document is available through the Minitex interlibrary loan system. It is not subject to frequent change.

Summary for Minn. R. 7035.2525: This rule revision corrects references due to proposed changes of Minn. R. 7001.3050.

7035.2525 SOLID WASTE MANAGEMENT FACILITIES GOVERNED.

[For text of subpart 1, see Minnesota Rules]

Subp. 2. Exceptions. Parts 7035.2525 to 7035.2915 do not apply to the following solid waste management facilities or persons, except as indicated:

[For text of items A to H, see Minnesota Rules]

I. mobile transfer facilities in compliance with part 7001.3050, subpart 2, item ~~G~~ E, must only comply with parts 7035.2535, subpart 1; 7035.2565, subparts 1, 3, and 4; and 7035.2870, subpart 2;

J. temporary community cleanup event transfer facilities in compliance with part 7001.3050, subpart 2, item ~~H~~ G, must only comply with parts 7035.2535, subpart 1; 7035.2565, subparts 1, 3, and 4; and 7035.2870, subpart 2;

K. limited collection transfer facilities in compliance with part 7001.3050, subpart 2, item ~~I~~ H, must only comply with parts 7035.2535, subpart 1; 7035.2555; 7035.2565, subparts 1, 3, and 4; and 7035.2870, subpart 2; and

[For text of item L, see Minnesota Rules]

Summary for Minn. R. 7035.2585: This rule revision adds the reporting requirement from the proposed part 7035.2830.

7035.2585 ANNUAL REPORT.

The owner or operator of a solid waste management facility ~~shall~~ **must** prepare and submit a single copy of an annual report to the commissioner no later than March 1 for the preceding calendar year. A report form and instructions may be obtained from the commissioner. The annual report must cover all facility activities during the previous calendar year and must include the following information:

[For text of items A to F, see Minnesota Rules]

G. an assessment of the adequacy of the closure, postclosure care, and contingency action plans;

H. the summary evaluation of the ~~groundwater monitoring~~ groundwater-monitoring program required under parts 7035.2815, subpart 14, item Q; 7035.2830, subpart 14, item Q; and 7035.2885, subpart 16;

I. the summary evaluation reports required for the specific solid waste management facilities in parts ~~7035.2825, subpart 9~~; 7035.2830, subparts 11, 13, 14, and 16; 7035.2836, subparts 3, item G, 5, items J and K, and 11, item B, subitem (14); 7035.2845, subpart 4a; and 7035.2875, subpart 5;

[For text of items J to L, see Minnesota Rules]

Waste facilities that do not dispose of waste need not include items D, H, and I.

Summary for Minn. R. 7035.2625: This rule was modified to delete reference to 7035.2825 and include a reference to the proposed part 7035.2830.

7035.2625 CLOSURE.

[For text of subparts 1 and 2, see Minnesota Rules]

Subp. 3. **Submittal and contents of closure plan.** The owner or operator of a solid waste management facility shall submit a closure plan with the permit application, or as required by a closure document, or in order to establish financial assurance mechanisms in accordance with part 7035.2695. For unpermitted land disposal sites, the owner or operator shall submit a closure

plan within 90 days after November 15, 1988. The agency shall approve the closure plan as part of the permit issuance procedure or as part of a submittal required by a closure document or other enforcement action. Compliance with the approved closure plan must be a condition of any permit, order, closure document, or stipulation agreement issued for the facility. The closure plan must be consistent with subparts 2, 4, and 5, part 7035.2635, and the applicable closure requirements of parts 7035.2665; 7035.2815, subpart 16; and ~~7035.2825~~ 7035.2830 to 7035.2915.

A copy of the approved closure plan, and all revisions to the plan, must be kept at the facility until closure is completed and certified under part 7035.2635. Except for transfer facilities and other facilities that will not have waste present following closure, the agency will issue a closure document in accordance with part 7001.3055. The plan must identify steps needed to close each fill phase, if appropriate, and the entire site at the end of its operating life. The closure plan must include:

A. A description of how and when each fill phase and the entire facility will be closed. The description must identify how the requirements of ~~parts 7035.2625~~, subparts 2 and 5; ~~parts~~ 7035.2635; and 7035.2815 to 7035.2915 will be complied with. The description must include the estimated year of closure and a schedule for completing each fill phase.

[For text of items B and C, see Minnesota Rules]

[For text of subparts 4 and 5, see Minnesota Rules]

Summary for Minn. R. 7035.2645: This rule revision adds the postclosure care plan activities from the proposed part 7035.2830.

7035.2645 POSTCLOSURE.

Subpart 1. **Submittal of postclosure care plan.** The landowner and the owner of a solid waste disposal facility ~~shall~~ must submit a postclosure care plan with the permit application. The agency must approve the plan in accordance with part 7001.3055 as part of the permit issuance procedure or as a submittal required by a closure document, stipulation agreement, or other enforcement action. Compliance with the approved postclosure plan ~~shall~~ must be a condition of any permit or closure document issued.

Subp. 2. **Postclosure care plan.** The landowner and the facility owner must keep a copy of the approved plan and amendments at the facility until the postclosure care period begins. During the postclosure care period, the plan must be kept by the contact person identified in item C. This plan must identify the activities to be carried on during the postclosure care period and the frequency of these activities, and must include at least:

A. A description, schedule, and estimated costs of planned monitoring activities to comply with parts 7035.2815, subparts 10 and 14; 7035.2830, subparts 12 and 14; and 7035.2885, subpart 16, during the postclosure care period.

B. A description, schedule, and estimated costs of the inspection and maintenance activities planned to ensure the integrity of the final cover and other containment systems according to parts 7035.2815, subpart 13; 7035.2830, subpart 16; and 7035.2885, subpart 15, and

the function of the facility monitoring equipment according to parts 7035.2815, subpart 14; 7035.2830, subpart 14; and 7035.2885, subpart 16.

C. The name, address, and telephone number of the person or office to contact about the facility during the postclosure care period. This person or office must keep an updated postclosure care plan during the postclosure care period.

Subp. 3. **Amendment to plan.** The landowner and the facility owner may amend the postclosure care plan at any time during the active life of the facility or during the postclosure care period. The landowner and the facility owner must amend the plan whenever changes in the operating plans, or facility design, or other events during the active life of the facility or the postclosure care period affect the postclosure care plan. The landowner and the facility owner must amend the plan whenever there is a change in the expected year of closure. The amended plan must be approved by the commissioner.

When a permit modification is requested to authorize a change in operating plans or facility design that will affect the postclosure care plan, the landowner and facility owner must modify the postclosure care plan at the same time. In all cases, the landowner or facility owner must request a modification of the plan within 60 days of any change or event that affects the postclosure care plan.

Summary for Minn. R. 7035.2665: This rule revision clarifies that newly permitted construction and demolition landfill facilities under the proposed Part 7035.2830 are subject to financial assurance requirements.

7035.2665 SCOPE.

Parts 7035.2685 to 7035.2805 apply to owners and operators of: all solid waste land disposal facilities except for industrial solid waste land disposal facilities that received an initial permit before January 1, 2011.

- ~~A. mixed municipal solid waste land disposal facilities;~~
- ~~B. municipal solid waste combustor ash land disposal facilities; and~~
- ~~C. the following facilities that received an initial permit after January 1, 2011: an industrial waste land disposal facility and a demolition debris land disposal facility, except those solid waste land disposal facilities that accept only demolition and construction debris and incidental nonrecyclable packaging and certain industrial wastes limited to wood, concrete, porcelain fixtures, shingles, or window glass resulting from the manufacture of building materials.~~

Summary of Minn. R. 7035.2685: This rule revision allows both new and existing facilities the option to calculate contingency action costs using either method as described in Subpart 1. C. (1) and (2) of this part.

7035.2685 COST ESTIMATES FOR CLOSURE, POSTCLOSURE CARE, AND CORRECTIVE ACTION.

Subpart 1. **Cost estimate requirements.** The following provisions apply to cost estimates.

A. The owner or operator ~~shall~~ must make a written estimate, in current dollars, of the cost of closing the facility in accordance with part 7035.2625 and applicable closure requirements in part 7035.2635. The estimate must be calculated according to subitems (1) and (2).

[For text of subitems (1) and (2), see Minnesota Rules]

B. The owner or operator of a facility subject to postclosure monitoring or maintenance requirements ~~shall~~ must make a written estimate, in current dollars, of the annual cost of monitoring and maintenance of the facility in accordance with the applicable postclosure requirements in part 7035.2645. The estimate must be calculated according to subitems (1) and (2).

(1) The owner or operator must calculate the postclosure cost estimate by multiplying the annual postclosure cost estimate by the number of years of postclosure care required under part 7035.2655. The postclosure cost estimate must include a contingency element that accounts for inflation expected to occur after site closure.

[For text of subitem (2), see Minnesota Rules]

C. The owner or operator ~~shall~~ must make a written estimate, in current dollars, of the cost of performing contingency action. The contingency action cost estimate must equal the expected value of implementing the contingency action plan required under part 7035.2615. ~~The owner or operator of a new facility may use method (1) or (2) to calculate the expected value of implementing the contingency action plan. The owner or operator of an existing facility must use method (2) (b) to calculate the expected value of implementing the contingency action plan. The estimate must be calculated according to subitems (1) and (2).~~

(1) The expected value may be based on probability analyses unique to the facility. These analyses must determine the probability of occurrence of each event described in the contingency action plan. The expected value of a single event is its implementation cost times its probability of occurrence. The expected value of implementing the entire contingency action plan is the sum of the expected values of each event described in the plan. If an owner or operator chooses this alternative, the owner or operator ~~shall~~ must provide the commissioner with details of the cost and probability analyses sufficient to allow the commissioner to evaluate the plan.

[For text of subitem (2), see Minnesota Rules]

Subp. 2. **Yearly update of cost estimate.** During the operating life of the facility, the owner or operator ~~shall~~ must adjust the cost estimates required in subpart 1 for inflation annually before the anniversary of the date on which the first cost estimates were prepared. The adjustment must be made using an inflation factor derived from the annual Implicit Price Deflator for Gross National Product as found in the Survey of Current Business issued by the United States Department of Commerce. The inflation factor is the result of dividing the latest published annual deflator by the deflator for the previous year. The commissioner ~~shall~~ must inform the owner or operator of the inflation factor needed to adjust cost estimates. Adjustments must be made by multiplying the latest cost estimate by the inflation factor. The result is the adjusted cost estimate.

In addition to any yearly update made under this subpart, the owner or operator must revise the cost estimates whenever a change in site conditions increases the cost of closure, postclosure care, or corrective action. The revised cost estimates must be adjusted for inflation as specified in this subpart.

[For text of subpart 3, see Minnesota Rules]

Summary of Minn. R. 7035.2695: This rule revision removes the exemption from the financial assurance requirement for new solid waste land disposal facilities that only accept construction and demolition debris and similar wastes. This rule revision exempts existing unlined disposal facilities that are subject to proposed Minn. R. 7035.2830, subpart 2.

7035.2695 FINANCIAL ASSURANCES REQUIRED.

A. The owner or operator of a mixed municipal solid waste land disposal facility or a municipal solid waste combustor ash land disposal facility that received an initial permit prior to January 1, 2011, ~~shall~~ must establish financial assurance for closure, postclosure care and corrective action at the facility by using one or more of the financial assurance mechanisms specified in parts 7035.2705 to 7035.2750.

~~B. For facilities that received an initial permit after January 1, 2011,~~ The owner or operator of a mixed municipal solid waste land disposal facility, a municipal solid waste combustor ash land disposal facility, an industrial waste land disposal facility, or a construction and demolition debris land disposal facility, ~~except those solid waste land disposal facilities that accept only demolition and construction debris and incidental nonrecyclable packaging and certain industrial wastes limited to wood, concrete, porcelain fixtures, shingles, or window glass resulting from the manufacture of building materials,~~ shall must establish financial assurance for closure, postclosure care, and corrective action at the facility by using one or more of the standardized financial assurance mechanisms specified in parts 7035.2705 to 7035.2745, or alternatively may propose a nonstandardized financial assurance mechanism under part 7035.2751 for approval by the commissioner. These facilities must maintain financial assurance as long as the facility poses a potential environmental risk to human health, wildlife, or the environment, as determined by the agency following an empirical assessment conducted under part 7035.2655.

~~C. This rule part does not apply to unlined construction and demolition debris land disposal facilities or to any other unlined solid waste land disposal facilities that accept construction debris and/or demolition debris for disposal and that are subject to part 7035.2830, subpart 2.~~

7035.2825 DEMOLITION DEBRIS LAND DISPOSAL FACILITIES.

Part 7035.2830 is being repealed and replaced with the new part 7035.2830.

7035.2830 CONSTRUCTION AND DEMOLITION DEBRIS LAND DISPOSAL FACILITIES.

Summary for Subp. 1: This rule establishes that landowners, owners, and operators of facilities that dispose of construction or demolition debris, as well as certain industrial solid waste, in or on the land are subject to proposed Rule Part 7035.2830, except those provisions which only apply to existing unlined construction and demolition debris disposal facilities. It does not apply to industrial solid waste disposal or mixed municipal solid waste facilities covered under separate regulations (7035.1590 to 7035.1900 and 7035.2815, respectively).

Subpart 1. Scope.

A. This part applies to landowners, owners, and operators of facilities that dispose of:

- (1) construction debris or demolition debris in or on the land, except as provided in subpart 2 and part 7035.2525, subpart 2; and**
- (2) construction debris or demolition debris, in addition to industrial solid waste in or on the land, except as provided 7035.2525, subpart 2.**

B. Construction and demolition debris land disposal facilities may propose alternate design and operational criteria within subparts 7 to 16. The commissioner must approve alternate design and operational criteria that are protective to human health and the environment. A facility proposing alternative criteria must submit a written request to the commissioner that includes:

- (1) a detailed description of the proposed alternative design or operational criteria;**
- (2) a technical justification demonstrating that the proposed alternative is at least as protective of human health and the environment as the applicable rule requirements;**
- (3) supporting data, engineering analysis, or performance demonstrations sufficient to evaluate the proposal; and**
- (4) a summary of any relevant site-specific conditions that support the proposed alternative.**

C. Upon receipt of a complete proposal, the commissioner must:

- (1) review the submission for completeness and notify the facility if additional information is required;**
- (2) evaluate the proposal based on potential risks to human health and the environment, and consistency with state rules and statutes; and**
- (3) provide a written determination to the facility. The determination may include approval, approval with conditions, or denial of the proposed alternative.**

D. If the commissioner denies the proposed alternative, or if agreement cannot be reached, the facility must comply with the applicable design and operational requirements specified in subparts 7 to 16.

E. This part does not apply to solid waste land disposal facilities that only accept industrial solid waste subject to parts 7035.1590 to 7035.1900, or mixed municipal solid waste land disposal facilities subject to part 7035.2815.

Summary for Subp. 2: This rule applies to all existing unlined construction and demolition debris land disposal facilities, or other unlined solid waste disposal facilities that accept such debris and remain open beyond the rule's effective date. Facility owners and operators must follow a transition

process that includes submitting a schedule and closure plan, maintaining and covering the site properly, and closing all unlined disposal areas according to specified requirements.

Subp. 2. Applicability and transition.

A. This subpart applies to all existing unlined construction and demolition debris land disposal facilities or to any other unlined solid waste land disposal facilities that accept construction debris or demolition debris for disposal and that have not closed before the effective date of this part. The owners and operators of these facilities must:

- (1) submit a transition schedule according to item C;
- (2) submit a transition closure plan in accordance with item D;
- (3) operate, maintain, and cover these facilities according to items F and G; and
- (4) close all unlined land disposal cells according to the closure requirements in item H, subitem (1), (2), or (3).

B. Facilities transitioning and closing under this subpart are not subject to part 7035.2830:

- (1) subpart 8, items B to E;
- (2) subpart 9;
- (3) subpart 11;
- (4) subpart 15;
- (5) subpart 16, items B, F, H, I, L, O to Q, V, Y, and Z;
- (6) subpart 17; and
- (7) subpart 19.

C. A land disposal facility subject to this subpart is considered closed when it:

- (1) stops accepting waste materials;
- (2) constructs a final cover according to the approved closure plan;
- (3) completes all the requirements of the approved closure plan; and
- (4) submits a construction certification of final closure to the commissioner that completes and documents the requirements in the approved closure plan in accordance with parts 7035.2635 and 7035.2830, subpart 18, item C.

D. Owners or operators of land disposal facilities subject to this subpart must submit a transition schedule within 12 months of the effective date of this part to the commissioner. The schedule must identify a timeframe to:

- (1) close the facility in its entirety;
- (2) close all existing unlined portions of any land disposal facility where solid waste is disposed including any unlined cells and phases and either:
 - (a) expand into a lined area at a currently permitted facility, or
 - (b) construct a new lined construction and demolition debris land disposal facility;

or

(3) transition to managing construction and demolition debris by means other than unlined land disposal acceptable under Minnesota law.

E. Owners or operators of land disposal facilities subject to this subpart that intend to close the facility and cease solid waste operations must submit a transition closure plan to the

commissioner with 12 months of the effective date of this part. The transition closure plan must include:

(1) a revised closure plan including associated cost estimates in compliance with subpart 18, part 7035.2625, and part 7035.2685, that identifies the final cover design as detailed in item H, subitem (1), (2), or (3);

(2) revised postclosure care plans including associated cost estimates in compliance with subpart 18, part 7035.2645, and part 7035.2685;

(3) revised contingency action plans including associated cost estimates in compliance with subpart 17, part 7035.2615, and part 7035.2685;

(4) a revised sampling and analysis plan that complies with subpart 14, if required due to facility modifications; and

(5) an updated emergency response plan that complies with part 7035.2595.

The commissioner must approve a transition closure plan that includes all the components of the plans listed above. If the transition closure plan submitted is not approved, the owner or operator must work with the commissioner to determine what additional information, methods, or procedures are required for the transition closure plan to ensure that closure is conducted in a manner protective of the environment. The owner or operator must submit additional transition closure plans if the commissioner deems it necessary to enable review before approving the final transition closure plan.

F. The owner or operator of a land disposal facility subject to this subpart must operate and maintain the facility in compliance with the following:

(1) The site must be developed in phases to achieve final fill elevations as rapidly as possible. The design of each phase must take into account weather conditions, site drainage, and the waste flow pattern into the site. The waste must be spread and compacted to the extent possible.

(2) Each phase must be staked for proper grading and filling.

(3) A minimum separation distance of 50 feet must be maintained between the fill boundaries and the site property line.

(4) Sampling and analysis of groundwater or surface water must be completed in accordance with subpart 14.

G. The owner or operator of a land disposal facility subject to this subpart must comply with the following cover requirements:

(1) All wastes must be completely covered on a monthly basis, unless the commissioner requires a different frequency of cover based on the wastes accepted, site operations, and site conditions.

(2) Suitable cover material must be maintained at the site. If suitable cover is not available on-site, cover material must be delivered to and stockpiled at the site.

(3) Each fill phase, upon reaching final permitted waste elevations, must be covered according to the approved closure plan.

H. The owner or operator of a land disposal facility subject to this subpart must close all unlined cells that have accepted construction debris or demolition debris within 8 years after the effective date of this part and install a final cover system according to subitem (1), (2), or (3).

(1) No later than two years after the effective date of this part, install a cover system consisting of at least two feet of soil that is compatible with the end use of the site, capable of sustaining vegetative growth and minimizing erosion, and contains materials consistent with the overall site design;

(2) No later than five years after the effective date of this part, install an enhanced soil cover system. An enhanced soil cover system is designed to contain or reject 95% of precipitation that falls on the system based on the EPA HELP model calculation. The model to be used for calculation is incorporated by reference in part 7035.0605, subpart M. The enhanced cover system must consist of:

(a) at least twelve inches of low permeability soil placed in two, six-inch lifts overlain by twelve inches of drainage material, thirty inches of rooting zone soils, and six inches of topsoil.

(b) lifts of soil tested to demonstrate no greater than 2×10^{-6} centimeters per second permeability, compacted within zero to five percent wet of optimum moisture content to achieve 95 percent Standard Proctor of maximum density;

(c) drainage material that has a minimum hydraulic conductivity of 1×10^{-2} centimeters per second;

(d) rooting zone soils that are forty-two inches thick and topsoil that is six inches thick when a geonet is used in place of twelve inches of drainage material; and

(e) a vegetative cover of shallow rooted perennial grasses or other vegetation that will not penetrate the drainage layer or have roots deeper than to the geonet; or

(3) No later than eight years after the effective date of this part, install an impermeable cover system that includes a synthetic membrane as a barrier layer and is designed to contain or reject 98.5 percent of precipitation that falls on the system based on the HELP model calculation. The model to be used for calculation is incorporated by reference in part 7035.0605, subpart M. The cover system must consist of criteria listed in subpart 8, item E.

I. Applications for unlined horizontal expansion must:

(1) include final slopes in accordance with subpart 8, item E, subitem (2),

(2) include a cover system design in accordance with subpart 2, item G, and

(3) demonstrate that the expanded capacity is necessary based on projected waste volumes.

J. Owners or operators of land disposal facilities subject to this subpart must complete a hydrogeologic evaluation in accordance with subpart 5, install a water monitoring system in accordance with subpart 12, and submit a sampling and analysis plan in accordance with subpart 14 within 24 months of the effective date of these rules.

Summary for Subp. 3: This rule outlines the types of waste allowed for disposal in construction and demolition debris landfills.

Subp. 3. Acceptable wastes. The following waste types are acceptable for disposal in a construction and demolition debris land disposal facility:

A. construction debris;

B. demolition debris; and

C. industrial solid waste according to the facility's industrial solid waste management plan under part 7035.2535, subpart 5.

Summary for Subp. 4: This rule establishes siting criteria for construction and demolition debris landfills to minimize environmental risks. This subpart is largely consistent with Minn. R. 7035.2815, Subpart 2.

Subp. 4. Location. Construction and demolition debris land disposal facilities must be located in accordance with items A to C and part 7035.2555.

A. A facility must be located only in an area where:

(1) the topography, geology, and groundwater conditions ensure the facility will be designed, operated, constructed, and maintained in a manner that minimizes environmental impacts;

(2) groundwater flow paths and variations in soil or bedrock conditions are known in sufficient detail to enable reliable tracking of pollutant movement in the event of a release from the facility;

(3) it is feasible to construct a monitoring system with sufficient monitoring points to assure that pollutants can be detected and tracked in the event of a release from the facility; and

(4) in the event of a release from a facility, pollutants can be contained and corrective actions taken to prevent adverse impacts on water supplies and to return the facility to compliance with groundwater and surface water quality standards.

B. Unless the owner or operator provides an engineered secondary containment system, a facility cannot be located in an area where the hydrologic or topographic conditions would allow rapid or unpredictable pollutant migration, impair the long-term integrity of the facility, or preclude reliable monitoring. An engineered secondary containment system must be approved by the commissioner and must consist of at least:

(1) a second liner with a collection system between the two liners;

(2) an in-place, operational groundwater containment and treatment or disposal system that can be activated immediately if groundwater pollution is detected; or

(3) another method of secondary containment backing up the liner providing additional protection equivalent to subitem (1) or (2) as approved by the commissioner and backing up the cover system.

C. A land disposal facility must not be located on a site where:

(1) there are karst features, such as sinkholes, solution channels, disappearing streams, and caves, that may cause failures of the leachate management system or prevent effective monitoring or containment of a release of leachate;

(2) there are other unstable soil or bedrock conditions that may cause failures of the leachate management system; or

(3) an airport runway used or scheduled for use by turbojet aircraft is located within 10,000 feet of the waste boundary, or an airport runway used or scheduled for use by piston type aircraft only is located within 5,000 feet of the waste boundary, unless approval is obtained from the Federal Aviation Administration.

Summary for Subp. 5: This rule requires the owner or operator of a facility to conduct a hydrogeologic evaluation to assess subsurface conditions and groundwater movement, allow for development of an environmental monitoring system, and to ensure environmental protection. This subpart is largely consistent with Minn. R. 7035.2815, Subpart 3.

Subp. 5. Hydrogeologic evaluation. The owner or operator must complete a hydrogeologic evaluation in accordance with items A to L.

A. The owner or operator of a facility must investigate and define the hydrogeologic conditions at the facility. The hydrogeologic evaluation must be included in the application for a permit under parts 7001.3275, 7001.3300, and 7001.3475. The owner or operator must provide updates and revisions to the hydrogeologic evaluation as needed to clarify and define changes in the hydrogeologic conditions.

B. The owner or operator may use previous data and field installations to help fulfill the hydrogeologic evaluation requirements. If the commissioner determines that portions of this previous work are reliable, well-documented, and comparable in informational content, they may be substituted for the corresponding type and number of work items required in this subpart.

C. Before conducting a hydrogeologic evaluation, the owner or operator must submit a work plan for the commissioner's approval. The work plan must contain a detailed description of the work proposed and the findings from any previous hydrogeologic evaluations, accompanied by documentation of information sources and methods and procedures used, boring and monitoring point logs, test data, and sample calculations. The commissioner must approve a work plan that ensures that the hydrogeologic evaluation will accurately reflect the hydrogeologic conditions at the facility. If the initial work plan submitted is not approved, the owner or operator must work with the commissioner to determine what additional information, methods, or procedures are required for the work plan to ensure an accurate hydrogeologic evaluation. The owner or operator must submit additional work plans if the commissioner deems it necessary to enable review between successive stages of field and laboratory investigations.

D. The owner or operator must define the hydrogeologic conditions for at least the following areas:

- (1) beneath the waste fill area and leachate management system;
- (2) sufficient distances beyond the waste fill area and leachate management system to define the soil and groundwater conditions that would control pollutant migration from the facility, based on the directions and rates of groundwater flow;
- (3) within areas in which corrective actions would be implemented to contain, recover, or treat leachate or polluted groundwater; and
- (4) within the following vertical zones:
 - (a) the unsaturated zone;
 - (b) any perched saturated zone;
 - (c) the zone of continuous saturation, from the water table, through the uppermost aquifer, the next aquifer below the uppermost aquifer, and any intervening units;
 - (d) for facilities that have affected groundwater quality to a depth greater than that given in unit (c), the zone of continuous saturation, from the water table to and including both the

lowest affected aquifer and the next aquifer below the lowest affected aquifer. As used in this unit, "lowest affected aquifer" means the lowest aquifer in which one or more pollutants originating from the facility exceed the intervention limits or alternative intervention limits under subpart 6; and

(e) any additional aquifers used locally as major sources of water supply.

E. Upon request of the owner or operator, the commissioner must approve a minimum depth shallower than required in item D, subitem (4) if it is unlikely that groundwater pollutants originating from the facility will migrate below this designated level.

F. The owner or operator must evaluate the available published and unpublished information about the facility site and surrounding area. The evaluation must include at least the following information if the information is available or can be developed from available sources:

(1) a description of previous investigations of the site and surrounding area, and a discussion of the reliability and completeness of this information;

(2) descriptions, maps, and aerial photographs depicting the site and surrounding area's geologic history, stratigraphic sequence, soils, topography, vegetation, climate, surface water hydrology, area water usage, regional hydrogeologic setting, groundwater occurrence at the site, aquifers and aquitards, hydrogeologic parameters such as transmissivity and storage coefficient, recharge and discharge areas, rates and directions of groundwater movement, and water quality;

(3) one or more geologic columns or sections;

(4) cross-sections, oriented along and perpendicular to the directions of groundwater flow;

(5) an inventory and a plan map of all active, unused, and abandoned wells within one mile of the facility. The inventory must include well logs and all other available information on well construction, water levels, and well usage, and must be based on thorough reviews of state and local collections of water well logs. The owner or operator must perform interviews or surveys of well owners to verify well usage if needed well logs are not available through other sources; and an inventory of all high-capacity wells and community water supply wells within three miles of the facility;

(6) The well inventory, plan map, and supporting information required under item F, subitem (5), must be field-checked and updated to include all wells within the prescribed distances. Owners of structures or facilities that may have wells must be contacted directly to supplement the information previously obtained; and

(7) for existing facilities, preliminary evaluations of the adequacy of the water monitoring system, and the monitoring points' compliance under chapter 4725, relating to water well construction, and the water quality monitoring data.

G. The owner or operator must evaluate in detail the distribution and properties of the earth materials underlying the site and the groundwater conditions beneath the site. The hydrogeologic evaluation work plan must satisfy the following:

(1) The evaluation must be sufficient to identify the soil and bedrock units beneath the site, delineate their areal and vertical extent, determine their water transmitting properties, identify perched saturated zones, define vertical and horizontal components of groundwater flow, predict pollutant movement in the event of releases from the facility, and provide the information needed for the report under item J.

(2) Descriptions of the following must be included:

(a) the methods and quality control measures to be used in drilling, logging, piezometer installation, boring and piezometer abandonment, and soils, bedrock, and groundwater testing.

(b) the hydrogeologic basis for the investigation, including specific subsurface conditions the investigations are likely to encounter and will seek to define.

(c) the planned numbers, locations, depths, and sequence of borings, test pits, geophysical, or other measurements, sampling sites, and testing sites.

(3) Soil borings must be sufficient to define the soil and bedrock conditions within the areas identified in item D. The initial drilling must include borings positioned throughout the site; within each geomorphic feature including ridges, knolls, depressions, and drainage swales; and within any geophysical anomalies already identified. The minimum required number of borings for the initial drilling is as follows:

Size of Site (acres)	Number of borings
0 - 10	15
11 - 19	Add one boring per additional acre
20	25
21 - 39	Add one boring per additional two acres
40	35
More than 40	Add one boring per additional four acres

Additional borings, geophysical investigations, or both borings and investigations must be done when needed to delineate the thickness, extent, and properties of the soil and bedrock units identified in the initial drilling. The owner or operator must complete test pits for examination of the near-surface soils if deemed necessary by the commissioner to characterize shallow subsurface conditions and hydrogeologic properties. In bedrock, the owner or operator must complete core samples if deemed necessary by the commissioner to identify the stratigraphic position of the uppermost bedrock or to determine the water-bearing and water-transmitting properties of the bedrock.

(4) Soil borings must comply with chapter 4725 and must not create pathways for pollutant migration. Borings must be permanently sealed using the procedures in part 4725.3850. Except where the soil boring is converted to an active piezometer or monitoring point, or where the Minnesota Department of Health approves alternative methods, soil and bedrock borings must be sealed with grout, bentonite, or other impermeable material in a manner that minimizes the potential for future pollutant movement along the borehole.

(5) Soil samples must be collected using procedures conforming to American Society for Testing and Materials (ASTM) standards D1586 (split-barrel), D1587 (thin-walled tube), D3550 (ring-lined barrel), D6282 (direct push), or equivalent methods approved by the commissioner.

Within each boring, soil samples must be collected at maximum five-foot intervals and at changes in soil type distinguishable through changes in drilling characteristics, examination of cuttings, or other means. At least one boring per ten acres of proposed waste fill must be continuously sampled below the elevation of the base of the fill. Wherever necessary to determine detailed stratigraphy, the commissioner must require smaller intervals between samples, additional continuously sampled borings, borehole geophysical logging, or other procedures. Samples must be preserved and transported in accordance with ASTM standard D4220. The ASTM standards are incorporated by reference in part 7035.0605.

(6) The soils and bedrock must be described and classified using information from field drilling observations, any geophysical logs, and laboratory examination and testing. Soil descriptions must include textural classification, primary and secondary structures, voids, and other properties that may affect soils correlations and influence pollutant movement. Rock cores or samples must be described and classified using accepted geologic classification systems and nomenclature.

(7) Based on the descriptions and testing required in subitems (6), (8), and (9), the soils and bedrock must be classified and, to the extent feasible, correlated over the site.

(8) For each soil unit identified on the site, a series of soil samples from different borings and elevations within the unit must be laboratory-tested. The owner or operator must develop a procedure and supporting rationale to select samples for this testing that are representative of the unit or are critically located within the unit. Together with the in-field testing required in subitem (9), the laboratory testing must determine the water-bearing and water-transmitting properties including, when appropriate, particle size distribution, porosity, vertical permeability, and clay mineral content or cation exchange capacity. Samples must not be combined into composites for classification or testing. Samples used to test permeability must not be compacted, and disturbance of samples must be minimized.

(9) A program to determine in-place permeabilities must be developed including criteria for the placement of test wells or piezometers. Test locations must be at or adjacent to logged borings and must be suitably distributed to characterize the variation in the permeabilities of soil or bedrock units.

(10) Groundwater flow conditions must be defined in detail within the zone specified in item D. A series of piezometers complying with subpart 12, item R, must be installed to map hydraulic head within this zone. Historical records and a series of on-site measurements must be used to determine the magnitude of fluctuations due to seasonality, nearby high-capacity pumping wells, fluctuations in adjacent rivers or other surface water bodies, or any other features influencing the hydraulic head near the facility.

(11) Logs of all soil and bedrock borings must be submitted to the commissioner. The soil and bedrock logs must contain the information generated under subitems (3) to (8) and a scale drawing of the soil types encountered. At a minimum, the logs must contain:

- (a) date of the boring;
- (b) name and address of the driller and testing firm;
- (c) drilling and sampling methods;
- (d) surveyed elevation of the ground surface above mean sea level;

- (e) surveyed location referenced to permanent benchmarks;
- (f) soil and rock classifications and narrative descriptions;
- (g) contacts between strata or units, sample depths, blow counts, and test data;
- (h) observations during drilling;
- (i) water level measurements;
- (j) any geophysical logs; and
- (k) sealing procedures.

H. Where drilling methods, testing methods, minimum quantities or depths, and reporting requirements are specified in items F to G and J to L, the owner or operator may propose alternative procedures if subsurface conditions indicate a need for these procedures. The commissioner must approve or require changes from the requirements in items F to G and J to L for good cause where item G is satisfied and where:

- (1) subsurface conditions are shown to be uniform, or the requirements are otherwise unnecessary or excessive for site conditions;
- (2) a requirement is infeasible for a particular site or hydrogeologic condition;
- (3) an alternative procedure would produce more or better information, or would reduce the chance of pollutant migration between connecting aquifers; or
- (4) the required procedures are insufficient to produce the information required in item

J.

I. Alternative procedures are acceptable only if the subsurface conditions are thoroughly defined and the uncertainty of monitoring and corrective action is not increased.

J. The report for the hydrogeologic evaluation must contain at least the information generated under items H and I, including the following:

(1) logs developed under item G, subitem 11, for borings and under subpart 12, items O to R, for piezometers and monitoring wells;

(2) descriptions of the soil and bedrock units and of the properties that may influence water movement including:

- (a) texture and classification;
- (b) particle size distributions;
- (c) mineral composition, cementation, and soil structure;
- (d) geologic structure, including strike, dip, folding, faulting, and jointing;
- (e) permeabilities, including vertical permeabilities, and porosity; and
- (f) lenses and other discontinuous units, voids, solution openings, layering, fractures, other heterogeneity, and the scale or frequency of this heterogeneity;

(3) one or more detailed geologic columns;

(4) descriptions of the hydrologic units within the saturated zone, including their thicknesses; hydraulic properties; the role and effect of each as an aquifer, aquitard, or perched saturated zone; and the actual or potential use of the aquifers as water supplies;

(5) plan-view maps and a series of cross-sections, spaced no more than 500 feet apart, oriented parallel to and perpendicular to the predominant directions of groundwater flow, and showing:

- (a) the areal and vertical extent of the soil and bedrock units;

- (b) the position of the water table;
- (c) measured values of hydraulic head;
- (d) equipotential lines and inferred groundwater streamlines;
- (e) soil or bedrock borings;
- (f) locations and construction of piezometers and monitoring points; and
- (g) locations of any geophysical measurements used to prepare the cross-sections.

(6) description and evaluation of the groundwater flow system, specifically addressing the following components and discussing their significance with respect to groundwater and pollutant movement:

- (a) local, intermediate, and regional flow systems;
- (b) groundwater recharge and discharge areas, interactions of groundwater with perennial or intermittent surface waters, and how the facility affects recharge rates;
- (c) existing or proposed groundwater and surface water withdrawals;
- (d) the effect of heterogeneity, fractures, or directional differences in permeability on groundwater movement;
- (e) directions of groundwater movement including vertical components of flow, specific discharge rates, and average linear velocities within the hydrologic units described in subitem (4); and

(f) seasonal or other temporal fluctuations in hydraulic head;

(7) an analysis of potential impacts on groundwater quality, surface water quality, and water users in the event of a release from the facility including projected paths and rates of movement of both water-soluble and low-solubility components of leachate; and

(8) if a mathematical or analog model is used to simulate groundwater flow or contaminant migration, a thorough description of the model and its capabilities and limitations, a statement of all assumptions or approximations made in using the model, identification of quantities or values derived from the model that are not confirmed by direct measurement, and an evaluation of the reliability and accuracy of the results.

K. The water-monitoring system must be designed and installed based on the information obtained under items F to J. The monitoring system must be installed according to a water monitoring system work plan and must comply with the requirements of subpart 12.

(1) The water monitoring system work plan must include:

(a) a description of the proposed monitoring system; monitoring point locations, design, and installation procedures; and a thorough evaluation of the suitability of any existing monitoring points proposed for inclusion in the monitoring system, including any deficiencies with respect to subpart 12;

(b) an explanation of how the proposed monitoring system addresses the hydrogeologic conditions identified under items F to J; and

(c) a preliminary version of the sampling and analysis plan required under subpart 14.

(2) The water monitoring system report must include:

(a) the monitoring point construction and installation records required under subpart 12, items O to S;

(b) a description of any changes from the locations, design, and installation procedures identified in the water monitoring system work plan; and

(c) an evaluation of any differences from previously reported soils and bedrock conditions, water levels, or groundwater flow conditions.

L. Water quality information must be collected from the monitoring system and interpreted to determine water quality conditions across the facility. Water quality monitoring must comply with subpart 14.

(1) The water monitoring system work plan must include the proposed sampling and analysis plan required in subpart 14; schedule of background or initial sampling dates; proposed analytical constituents and measurements; and methods of data analysis and interpretation.

(2) The report for the water quality monitoring must contain the monitoring and quality assurance data, analysis of water quality trends, and identification of constituents that exceed the groundwater performance standards of subpart 6 or surface water quality standards of chapter 7050.

Summary for Subp. 6: This rule establishes groundwater performance standards for facilities to demonstrate compliance with environmental standards. This subpart is largely consistent with Minn. R. 7035.2815, Subpart 4.

Subp. 6. **Groundwater performance standards.** The owner or operator must design, construct, operate, and maintain the facility to achieve compliance with items A to J.

A. Compliance boundaries must be established according to items B to E. Groundwater quality must comply with items E, F, and H at the locations given in item F. If an intervention limit established under items E, F, or H is exceeded in groundwater at any location, the owner or operator must take the actions specified in item G.

B. The owner or operator must propose locations for the compliance boundary. The owner or operator must submit the proposed locations to the commissioner, together with the rationale for the selected locations, supporting information, and any additional information needed to describe the locations of the boundaries in the facility permit.

C. The compliance boundary must be established as follows:

(1) The compliance boundary must surround the waste fill area and leachate management system. It must be located on the facility property, with a sufficient setback from the property boundary to enable the installation of monitoring points and, if necessary, groundwater control features. The following factors must be considered in establishing the location of the compliance boundary:

(a) hydrogeologic factors, including attenuation and dilution characteristics; groundwater quantity, quality, flow rates, and flow directions; and anticipated rates and directions of pollutant movement;

(b) the feasibility of groundwater monitoring at the compliance boundary;

(c) the feasibility of corrective actions to maintain compliance with groundwater quality standards at the compliance boundary;

(d) the volume, composition, and physical and chemical characteristics of the leachate;

(e) the proximity and withdrawal rates of groundwater users, and the availability of alternative water supplies; and

(f) any other public health, safety, and welfare effects.

(2) Except as otherwise provided in this subitem, the distance between the compliance boundary and the permitted waste boundary must be no greater than 200 feet. The owner or operator must request a smaller separation distance if groundwater flow rates are very slow or where necessary to provide additional protection to groundwater, including sites with downward groundwater flow. At existing facilities, including expansion areas, a separation distance greater than 200 feet is acceptable if the following conditions are met:

(a) the commissioner determines that the owner or operator has provided sufficient monitoring to assure reliable detection and tracking of pollutant migration within the area enclosed by the compliance boundary, and that the larger separation presents no greater risk to water quality and water use than a separation distance of 200 feet or less;

(b) the hydrogeologic evaluation under subpart 5 is complete or will be completed according to a compliance schedule; and

(c) the owner or operator revises the cost estimate for contingency action under subpart 17 and part 7035.2615 to reflect any greater costs for additional monitoring; groundwater containment, removal, and treatment; and other contingency actions, and provides evidence of financial assurance to pay for the increased costs.

D. In addition to the compliance boundary required of all facilities under item C, the owner or operator must submit a lower compliance boundary for commissioner approval at any facility where there is a potential for substantial pollutant migration downward to a deeper aquifer. The lower compliance boundary must be designated at a contact between soil or hydrogeologic units, or other definable surface within the saturated zone, and must be located to prevent adverse effects on water supplies.

E. The owner or operator must designate a surface water compliance boundary if it is determined, by the analysis under subpart 5, item I, subitem (7) or otherwise, that pollutants entering the groundwater from the facility may migrate to surface water at concentrations that could adversely affect the quality of surface water.

(1) The surface water compliance boundary must be designated as a vertical plane extending downward from the land surface or as some other readily definable plane located between the land disposal facility and the surface water.

(2) The surface water compliance boundary may either replace a portion of the compliance boundary or be designated in addition to the compliance boundary that represents the boundary where groundwater is discharging to surface water. The surface water compliance boundary may replace a portion of the compliance boundary only if the facility is within 500 feet of the surface water and the commissioner determines that all pollutants entering the groundwater from the facility will discharge into that surface water.

(3) The commissioner must establish standards and intervention limits for the surface water compliance boundary in the facility permit based on the applicable provisions of chapter

7050. If the surface water in turn recharges an aquifer used as a water supply, the commissioner must establish standards and intervention limits protective of both surface water and drinking water.

(4) The owner or operator must submit any facility and site information needed to establish standards and intervention limits for the surface water compliance boundary, including low-flow stream discharge rates, mixing characteristics and rates, biological communities, and chemical composition of the surface water and leachate.

F. Except as provided in this item and items E and H, pollutant concentrations in groundwater must not exceed the surface water or drinking water standards in this item at or beyond the compliance boundary and at or below the lower compliance boundary. The standards and intervention limits for these two boundaries are 25 percent of health risk limits.

G. If an intervention limit established under items E, F, or H is exceeded in groundwater at any location where the facility's impacts are monitored, the owner or operator must:

- (1) immediately notify the commissioner in writing;
- (2) immediately resample if previous samples at the facility did not exceed the intervention limits;
- (3) evaluate the need to resample if previous samples exceeded the intervention limits;
- (4) evaluate the significance of the exceedance and the source or cause of the constituents exceeding the intervention limits;
- (5) evaluate the need for immediate corrective action to prevent pollutant concentrations from approaching or exceeding standards at the compliance boundary, surface water compliance boundary, or lower compliance boundary;
- (6) evaluate the need for changes in water monitoring, including sampling frequencies, constituents analyzed, and installation of additional monitoring points;
- (7) within 30 days after obtaining the sample results in which an intervention limit was exceeded, submit a written report to the commissioner describing the evaluations and conclusions under subitems (2) to (6) and the actions taken or planned under subitem (8); and
- (8) take other actions described in the facility's contingency action plan and as required in subpart 17 and part 7035.2615.

H. In lieu of the intervention limits and standards under items E and F, the owner or operator may propose alternative standards and intervention limits in the facility permit application for subitem (1). In lieu of the intervention limits under items E and F, the commissioner must establish alternative standards and intervention limits in the facility permit for subitems (2), (3), or (4) as follows:

(1) If the concentration of any constituent in the background groundwater at a facility is greater than a standard or an intervention limit established in this subpart, the background concentration of the constituent must be used as the standard or intervention limit. For purposes of this subitem, "background" refers to the condition of groundwater that has experienced no change in quality due to migration of constituents from the facility. If the background water quality is inadequately defined, the owner or operator must perform additional evaluation such as sampling, statistical analysis of sampling data, and installation of additional monitoring points. The commissioner must alter the alternative standards or intervention limits if background water

quality is changing due to actions or events occurring outside the facility property and beyond the owner's or operator's control.

(2) If the quality of a public water supply is potentially affected by migration of leachate from a facility, and if the maximum contaminant level for a substance as defined and established under either chapter 4720 or under the National Primary Drinking Water Regulations, Code of Federal Regulations, title 40, part 141, is a lower concentration than the standard under items E and F, the commissioner must use the maximum contaminant level as the alternative standard and alternative intervention limit for that substance.

(3) If a substance is present in groundwater at a facility, and if that substance is known to impart undesirable taste or odor to drinking water, the commissioner must use alternative intervention limits and standards established by the commissioner of health to avoid these taste and odor effects.

(4) If a substance does not have an intervention limit or standard according to item F, is present in groundwater at a facility, and is determined by the commissioner of health to be potentially harmful to health, the commissioner of the Pollution Control Agency must establish alternative intervention limits and standards for that substance. Except as provided elsewhere in this subpart, the alternative intervention limits and standards are 25 percent of the health-based value or risk assessment advice or any concentration of a substance determined by the commissioner of health to potentially be harmful to health.

I. If a substance is not detected in a sample and the limit of detection is higher than the intervention limit or standard for that substance, the intervention limit or standard is not assumed to have been attained or exceeded.

J. The commissioner, after investigation and evaluation and after determining it is necessary to protect human health, must require the owner or operator to implement the facility contingency action plan and to take corrective action under the following circumstances, even if a standard or intervention limit established under this subpart is not being exceeded:

(1) in the event of a substantial release of leachate that the commissioner may reasonably expect to result in a violation of water quality standards; or

(2) based on the additive carcinogenicity or toxicity of a combination of pollutants in the groundwater, in lieu of the limits for individual substances under items E, F, and H. The additive carcinogenicity or toxicity must be computed according to parts 4717.7880 and 4717.7890. When quantification using this approach is feasible, the commissioner must require response actions if the total risk of consuming the water over a lifetime would exceed the health risk index of 0.25 for either cancer or noncancer risks.

Summary for Subp. 7: This rule establishes design requirements for construction and demolition debris land disposal facilities to ensure environmental protection and operational efficiency. This subpart is largely consistent with Minn. R. 7035.2815, Subpart 5.

Subp. 7. General design requirements. The design requirements for a construction and demolition debris land disposal facility are as follows:

A. The owner or operator must develop an engineering report for the site. The report must include specifications for site preparation. The report must be submitted with the final permit application required under part 7001.3300. The report must establish specifications for site preparation as they relate to phase development. Site preparations include clearing and grubbing for disposal areas and building locations, topsoil stripping and storage, cover material excavation, other excavations, berm construction, drainage-control structures, leachate collection and treatment system for facilities required to have a leachate collection and management system, groundwater monitoring system, gas monitoring and collection system for facilities required to have a gas monitoring and collection system, entrance and access roads, screening, fencing, and other special design features.

B. The owner or operator must develop the site in phases. Each phase must contain individual cells that fill in a manner to achieve final waste elevations as rapidly as possible. The phases and cells must be designed and constructed to minimize moisture infiltration into the fill areas while maintaining stable slopes and operating conditions according to subpart 16. The owner or operator must consider seasonal phases and cells to accommodate the differences between wet and dry and warm and cold weather operations. The phases and cells must be designed in order to fill each cell to the final waste contours as soon as possible, as shown on the site development plan, and the construction sequence plan as described in part 7001.3425, subpart 2, item B, subitem (7).

C. Any new fill area at a facility must be located at least 200 feet from the nearest property line, unless otherwise approved by the commissioner based on existing filling procedures, existing site structures, the facility design, compliance boundaries, and existing land restrictions.

D. The owner or operator must divert surface water drainage around and away from the site operating area. A drainage control system, including changes in the site topography, ditches, berms, sedimentation ponds, culverts, energy breaks, and erosion control measures, must take into consideration at least:

- (1) the expected final contours for the site and the planned drainage pattern;
- (2) the drainage pattern of the surrounding area and the possible effects on and by the regional watershed;
- (3) the need for temporary structures as filling progresses at the site;
- (4) the base of each fill area and the top of each lift graded at a minimum two percent slope; and
- (5) the area's one hundred-year, 24-hour rainfall event.

E. The owner or operator must design and maintain slopes and drainageways to prevent erosion, particularly of liner and final cover materials. Slopes greater than 160 feet long must include diversion drainageways unless the commissioner approves a greater distance based on sedimentation run-off calculations, proposed design features and sedimentation control devices. Where water runs off top slopes onto steeper side slopes, the owner or operator must evaluate the need for drainageways around the perimeter of the top slope and flumes or drop structures to prevent erosion of the cover. Drainageways must include energy breaks and concrete or rip rap reinforcement necessary to prevent erosion.

F. The owner or operator must provide a sediment-settling pond if run-off would otherwise carry excessive sediment off the facility property. The commissioner must require water-quality monitoring within or beneath a sedimentation pond and corrective actions as necessary if adverse water quality effects are detected.

G. The final contours for the fill area must be a minimum three percent and a maximum 25 percent slope unless the commissioner approves other contours based on existing site topography, design plans, and operating conditions.

H. The facility design must include:

(1) a liner system in accordance with subpart 9 for facilities required to have a leachate collection and management system;

(2) a cover system in accordance with subpart 8;

(3) a leachate collection and treatment system in accordance with subpart 11 for facilities that are required to have a leachate monitoring and collection system;

(4) a water monitoring system in accordance with subpart 12; and

(5) a gas monitoring and collection system in accordance with subpart 13 unless determined to be unnecessary by the commissioner based on the location, waste characteristics, and site characteristics.

Summary for Subp. 8: This rule establishes cover system requirements for construction and demolition debris land disposal facilities to ensure environmental protection, stability, and proper closure. This subpart is largely consistent with Minn. R. 7035.2815, Subpart 6. New facilities and existing unlined facilities that have reached the end of their transition period will be required to follow the intermittent, intermediate, and final cover items in this subpart.

Subp. 8. Cover systems.

A. The owner or operator of a construction and demolition debris land disposal facility must design and maintain a cover system capable of minimizing infiltration of precipitation into the fill areas, preventing surface water ponding on fill areas, controlling gas movement, preventing erosion of surface and side slopes, reducing wind erosion and wind-blown litter, minimizing the creation and movement of dust, retaining slope stability, reducing effects of freeze-thaw and other weather conditions, maintaining vegetative growth while minimizing root penetration of the low permeability cover layer, and discouraging vector and burrowing animal intrusion into the site.

B. A complete cover system must consist of intermittent, intermediate, and final covers as outlined in items C to E.

C. The owner or operator must place an intermittent cover on all exposed solid waste in accordance with the site's approved operation and maintenance manual. The cover must completely cover exposed waste and consist of at least six inches of soil, similar material, or alternative approved under subitems (1) and (2).

(1) A proposed intermittent cover system must be submitted to the commissioner for approval and must address:

(a) The frequency of cover placement based on the type of waste accepted:

i. The owner or operator of a construction and demolition debris land disposal facility that accepts only construction and demolition debris must place cover at least weekly.

ii. The owner or operator of a construction and demolition debris land disposal facility that accepts industrial solid waste that is likely to generate nuisance conditions or generate methane or other decomposition gases within the landfill must place cover daily;

(b) The depth of cover material; and

(c) The type of material used as cover.

(2) In reviewing the proposed cover system, the commissioner will consider:

(a) The properties of the cover material;

(b) The physical and chemical characteristics of the waste;

(c) The leaching potential of the waste;

(d) The design and operational practices of the facility; and

(e) The potential for nuisance conditions based on the type of waste accepted.

D. When no solid waste will be placed on a fill area for 30 days or more, the owner or operator must place intermediate cover on the filled area of the facility. The intermediate cover must consist of compacted material of at least 12 inches of soil, cover the waste completely, and be graded to prevent surface water ponding.

E. The owner or operator of an existing construction and demolition debris land disposal facility must comply with the following final cover requirements:

(1) The final cover system must be compatible with the end use for the site.

(2) The final cover system must be graded to prevent surface water ponding and must have a minimum slope of three percent and a maximum slope no greater than 25 percent.

(3) The final cover system must be designed to contain or reject 90 percent of precipitation that falls on the system based on the HELP model calculation. The HELP model is incorporated by reference in part 7035.0605, subpart M. The permeability of the final cover system must meet or exceed the permeability of the liner system.

(4) A final cover system must consist of at least three layers; a barrier layer, a drainage layer, and a top layer. The drainage layer must be at least six inches thick. The top layer must be at least 18 inches thick, of which at least six inches is topsoil.

(a) Facilities utilizing synthetic material in the liner design must also utilize synthetic material in the barrier layer of the final cover design. The membrane must be at least 30-mil thick and meet the physical property standards for the material type developed by the National Sanitation Foundation and reproduced in the United States Environmental Protection Agency Manual, "Lining of Waste Impoundment and Disposal Facilities", SW-870, March 1983, Office of Research and Development, Cincinnati, Ohio, which is incorporated by reference under part 7035.0605.

(b) Facilities utilizing only soil materials in the liner design may utilize a soil barrier layer in the final cover design that is at least 24 inches thick of materials having a permeability not greater than 2×10^6 centimeters per second.

(5) A geonet encased in geotextiles on both sides may be used instead of a 12-inch granular drainage layer. The top layer must be at least two feet of cover soils placed over the geonet, of which the top six inches must be topsoil.

(6) In designing the drainage for the final cover system, the owner or operator must consider the need for drainage ditches, pipes, and collection areas to prevent erosion and excessive sediment movement off site. The owner or operator must also consider design and construction techniques needed to maintain the drainage layer in place on the barrier layer.

(7) The layer of topsoil must be capable of sustaining vegetative cover and be of sufficient depth to contain the vegetative roots of shallow-rooted perennial grasses or other vegetation that will not penetrate the drainage layer or the geonet.

(8) The barrier layer must be placed upon a buffer material covering the waste to protect the barrier layer from damage. The buffer layer must consist of compacted material of at least 12 inches of soil, must cover the waste completely, and must be graded to prevent surface water ponding.

Summary for Subp. 9: This rule establishes liner requirements for construction and demolition debris land disposal facilities. This subpart is largely consistent with Minn. R. 7035.2815, Subpart 7. New facilities and existing unlined facilities that have reached the end of their transition period will be required to follow this subpart.

Subp. 9. Liner requirements.

A. Any new construction and demolition debris land disposal facility must be lined. A liner installed at a construction and demolition debris land disposal facility must comply with this subpart.

B. The lined portion of the disposal area must be separated from any existing unlined fill area by low permeability material, and must be designed to prevent movement of water from the lined fill area to the unlined fill area.

C. The liner system in combination with the cover system must achieve an overall site efficiency of 98.5 percent collection or rejection of precipitation that falls on the disposal area and must minimize the amount of leachate leaving the fill site to the soil and groundwater system below the site.

D. The liner system must be designed so that the waste and leachate will not degrade or compromise the liner system.

E. The liner must maintain its integrity for the operating life of the facility and postclosure care period.

F. The liner system must consist of at least:

(1) a smooth, stable subgrade for placement of the barrier liner, created by placing protective material over the existing subgrade, removing sharp and abrasive objects, organic matter, and vegetation in the subgrade, and regrading;

(2) a barrier liner capable of containing leachate generated at the facility and surface water that has come in contact with waste; and

(3) a drainage layer above the barrier liner to rapidly convey surface water and leachate from the fill area, and to protect the barrier layer from puncture or other disturbances that might disrupt the integrity of the barrier liner.

G. A natural soil barrier liner must be at least four feet thick. A synthetic membrane must be at least 60-mil thick for an unreinforced membrane or 30-mil thick for a reinforced membrane. A synthetic membrane must meet the specifications of ASTM D7176-22 for non-reinforced polyvinyl chloride geomembranes, GRI - GM-13 for high density polyethylene (HDPE) geomembranes, or GRI – GM17 for linear low-density polyethylene (LLDPE), as applicable. The methods are incorporated by reference under part 7035.0605. The synthetic membrane must be placed over a natural soil barrier liner at least two feet thick. The drainage layer must consist of at least 12 inches of soil material or a synthetic material in accordance with subitem H.

H. The barrier liner must have a permeability no greater than 1×10^{-7} centimeters per second. The drainage layer must have a permeability of 1×10^{-3} centimeters per second or greater throughout.

I. The base of the liner must be graded to a minimum two percent and a maximum ten percent slope, and the side slopes must be no steeper than 50 percent.

J. The barrier layer must be compacted in lifts no greater than eight inches.

K. The drainage layer must cover the base liner and the side slopes.

L. The liner must be designed to have a leachate collection efficiency of at least 95 percent of the precipitation that falls on the fill area. The efficiency calculation must consider the liner thickness, liner slope, saturated hydraulic conductivity of the liner and drainage layer, drainage layer thickness, permeability of the drainage layer and liner, porosity of the drainage layer, flow distance to collection pipes, and amount of leachate to be generated and collected based on annual infiltration and groundwater inflow.

M. An alternative liner system design may be used when approved by the commissioner. The commissioner's approval must be based on the ability of the proposed liner system to control leachate migration, meet performance standards, and protect human health and the environment.

N. The owner or operator of a construction and demolition debris land disposal facility must discuss the design of the liner system in the engineering report required in part 7001.3425, subpart 1, item D and must address at least:

(1) the source and quantity of natural soils capable of meeting the requirements of this subpart;

(2) the likelihood and consequences of failures caused by puncture, tear, creep, freeze-thaw, thermal stress, abrasion, swelling, extraction, oxidative degradation, exposure to ultraviolet radiation, acidic conditions, concentration of ions, organic constituents, pressure, and the presence of gases, rodents, microbes, and root penetration;

(3) the composition of the drainage layer and liner including the soil gradations, percent fines, mineral composition, and solubility under acidic conditions and when in contact with solvents; and

(4) the calculations and assumptions used in choosing the particular design proposed for the facility.

O. The commissioner must approve the method used by the facility to protect the liner system from damage during operation of the facility.

P. The installation of the liner must comply with the construction specifications under subpart 15.

Q. A bentonite geocomposite liner may be used to replace one foot of a compacted clay liner if the combination of its thickness and hydraulic conductivity results in liquid migration through the liner that does not exceed the rate of liquid migration through two feet of clay that has a saturated vertical hydraulic conductivity equal to 1.0×10^{-7} centimeters per second.

R. A bentonite geocomposite liner must consist of sodium bentonite that is contained on each side by a fabric, geotextile, or flexible membrane liner.

S. A bentonite geocomposite liner must not be laid during precipitation events and must be covered immediately by a flexible membrane liner or other protective cover.

T. A bentonite geocomposite liner must be installed in accordance with the manufacturer's specifications and quality assurance quality control plans that are approved by the commissioner under subparts 10 and 15.

Summary for Subp. 10: This rule establishes testing and evaluation requirements for materials used in cover and liner systems at construction and demolition debris land disposal facilities. This subpart is largely consistent with Minn. R. 7035.2815, Subpart 8.

Subp. 10. Cover and liner materials evaluation.

A. The owner or operator must evaluate soils intended for use as cover or liner material as appropriate for the following properties:

(1) particle size distribution according to ASTM D6913, as amended, and ASTM D7928, as amended.

(2) percent fines according to ASTM D1140;

(3) Atterberg limits according to ASTM D4318, and ASTM D4943;

(4) specific gravity according to ASTM D854;

(5) soil description according to ASTM D2488;

(6) soil classification according to ASTM D2487 and ASTM D6913;

(7) water content according to ASTM D2216;

(8) compaction according to ASTM D698 or ASTM D1557;

(9) consolidation according to ASTM D2435;

(10) permeability according to ASTM D2434;

(11) mineralogy according to the American Society of Agronomy and American Society for Testing and Materials;

(12) unconfined compression according to ASTM D2166;

(13) triaxial compression according to ASTM D2850;

(14) cation exchange capacity according to Methods of Soil Analysis; and

(15) the nutrient content, pH, and percent organic matter for topsoils used to grow vegetation.

B. The owner or operator must evaluate flexible membrane covers or liners intended for use in a cover or liner system for leaks as appropriate in accordance with at least one of the following standards:

- (1) ASTM D7007;
- (2) ASTM D8265;
- (3) ASTM D7002;
- (4) ASTM D7703;
- (5) ASTM D7240; and
- (6) ASTM D7953.

C. The standards referenced in items A and B are incorporated by reference in part 7035.0605. Alternative test methods that are as stringent or more stringent than the reference standard may be used upon written approval by the commissioner.

Summary for Subp. 11: This rule establishes requirements for leachate management at new construction and demolition debris land disposal facilities. It mandates a leachate detection, collection, and treatment system to be implemented to monitor, collect, and properly treat leachate. This subpart is largely consistent with Minn. R. 7035.2815, Subpart 9. New facilities and existing unlined facilities that have reached the end of their transition period will be required to follow this subpart.

Subp. 11. Leachate detection, collection, and treatment system. The facility design must include a leachate detection system, a leachate collection system, and on-site or off-site leachate treatment system. The detection system must monitor the level of leachate buildup in the fill area and the effectiveness of the liner system. The collection and treatment systems must collect the leachate for proper treatment. The system must comply with items A to L.

A. The owner or operator must install the detection system at the lowest elevation of the fill area and throughout the fill area to monitor leachate build-up and for use as a part of the collection system. The detection system must be capable of monitoring leachate build-up in the fill area and consist of collection lysimeters and standpipes capable of monitoring, detecting, and determining leachate movement through the liner. The detection system must consist of materials compatible with the leachate. The commissioner must approve a detection system without collection lysimeters or standpipes if the owner or operator shows that lysimeters or standpipes are unnecessary based on the liner system, subsurface soil conditions, groundwater and surface water flow patterns, depth to groundwater, and the amount of leachate generated. The detection system must be designed and constructed to monitor the effectiveness of the leachate storage area.

B. The owner or operator must construct a clean-out system capable of cleaning the entire collection system. The lengths and configurations of the leachate collection system must not exceed the capabilities of clean-out devices.

C. The owner or operator must design the size of the collection system according to subitems (1) to (4).

(1) The owner or operator must complete a water balance calculation based on the amount of precipitation, evapotranspiration, surface runoff, soil and waste moisture storage capacity, root zone depth, surface slope, subsurface lateral drainage, and average monthly

temperature. The owner or operator must derive the leachate generation rate by calculating the amount of water that percolates through the cover each month using actual data from an average weather year and a year when the precipitation exceeds the average precipitation by at least 20 percent. The engineering report must contain all calculations and assumptions made during the water balance calculation.

(2) The owner or operator must consider the size of the fill area the collection system will serve when determining pipe and storage area sizing.

(3) The capacity of the collection system must be based on the water balance calculated in subitem (1) and the site efficiency as calculated in subpart 9, item L. In sizing sump pumps to remove leachate from the fill area, the owner or operator must use the storage capacity anticipated in the waste and leachate collection system, the anticipated amount of leachate to be generated, and the amount of leachate moving to the holding area by gravity drains. The pumps must be compatible with the leachate.

(4) The storage area must be designed and constructed to drain leachate back into the leachate collection system to minimize the potential for overflowing the storage area. The storage design must be capable of detecting leaks, containing the leaks, and minimizing the need for corrective actions.

D. The height of freestanding liquid over the liner in the fill area must not exceed one foot.

E. The unintercepted leachate flow distance along the drainage layer must not exceed 100 feet.

F. The leachate collection layer must have no more than five per cent carbonate content by weight.

G. The design of the collection system must include collection pipes of sufficient diameter to handle the flow and allow cleaning. The pipes must be capable of handling loads experienced during construction and disposal of solid waste. The engineering report must contain the buckling capacity and compressive strength of the pipes. The pipes must be placed in lined trenches and covered with a filter material or geotextile membrane designed and constructed to encourage flow to the pipe and prevent infiltration of fine-grained soils. The geotextile membrane must not be placed in contact with the collection pipes.

H. The collection pipes must be:

(1) trenched into the barrier liner with the same thickness of liner beneath the pipes as exists within the lined fill area; or

(2) constructed under a positive projection condition.

I. The collection system must consist of pipes resistant to chemical and biological breakdown as a result of contact with the leachate.

J. The design and construction of the collection system must be coordinated with the planned phase development for the site and the amount and timing of leachate generation.

K. The collection system must be designed to allow the collection of leachate samples for chemical analysis.

L. The owner or operator must design and construct the collection system to transport leachate into a holding area for testing and treatment before disposal if the leachate is not conveyed directly to the leachate treatment system. All leachate conveyance piping or containment

components outside the landfill liner and cover systems must be double walled or have a secondary containment system. The owner or operator must design any holding area or treatment system to be compatible with the leachate and capable of preventing releases of leachate to the environment. The treatment and disposal of leachate must comply with parts 7001.0010 to 7001.0210, and 7001.1000 to 7001.1150.

Summary for Subp. 12: This rule outlines the requirements for designing, installing, and maintaining water monitoring systems at construction and demolition debris land disposal facilities. This subpart is largely consistent with Minn. R. 7035.2815, Subpart 10.

Subp. 12. **Water monitoring systems.** The owner or operator must design, install, and maintain a water monitoring system in compliance with items A to T.

A. A water monitoring system must be installed at a construction and demolition debris land disposal facility and must be designed, constructed, and operated to:

- (1) yield samples that are representative of the water quality in the portions of the groundwater, surface water, or unsaturated zone that the individual monitoring points are intended to sample;
- (2) ensure groundwater or surface water quality potentially affected by the facility to be distinguished from background water quality;
- (3) allow early detection of the release of pollutants from a facility;
- (4) allow determination of the composition, areal and vertical extent, concentration distribution, and highest concentrations of pollutants in the groundwater or surface water; and
- (5) ensure the facility complies with the groundwater performance standards of subpart 6.

B. The owner or operator must demonstrate that the water-monitoring system is able to reliably detect pollution and to comply with this subpart. The numbers, types, locations, and depths of monitoring points, and the separation distances between them, must be designed based on:

- (1) an evaluation of potential sources of leachate releases, including the leachate collection system, critical or higher-risk areas of the liner, areas of greatest potential buildup of leachate on the liner, leachate tanks, and leachate treatment and holding areas;
- (2) an evaluation of the hydrogeologic conditions at the facility, including the variability of water quality and the projected paths and rates of migration of leachate from the potential sources identified in subitem (1). This analysis must include both water-soluble and low-solubility components of leachate; and
- (3) the location of any potentially impacted water supply wells, other points of water use, and surface waters.

C. Water monitoring systems must include monitoring points situated as follows:

- (1) Monitoring points must be installed upgradient and downgradient from the facility, with upgradient monitoring points in each aquifer that has a downgradient monitoring point.
- (2) All monitoring systems must, at a minimum, allow early detection of the release of leachate from each of the potential sources identified under item B, subitem (1).

(3) If pollutants originating from the facility are detected in groundwater, the owner or operator must provide additional monitoring points as necessary to delineate the polluted zone and to measure the facility's compliance with the groundwater performance standards of subpart 6.

(4) Monitoring points must be installed within aquitards, confining units, and aquifers, as needed, to meet the requirements of this subpart.

(5) The commissioner must require water quality monitoring beneath an aquifer or aquitard that is already affected by leachate unless there is little or no risk to the deeper groundwater.

(6) Where changes in land use, water use, or other factors have altered groundwater flow, the owner or operator must implement necessary changes in the monitoring system.

D. The owner or operator must provide monitoring points or instrumentation other than conventional monitoring wells if needed to fulfill the requirements of this subpart. The owner or operator must install additional monitoring points whenever necessary to monitor conditions other than groundwater quality, including hydraulic head, groundwater or surface water flow, and leachate quality and movement in the unsaturated zone.

E. Before any monitoring point is constructed, sealed, rebuilt, or redeveloped, the owner or operator must submit the design and description of the proposed actions to the commissioner for review and approval for compliance with this subpart. A monitoring well construction permit must first be obtained from the commissioner of health, in accordance with part 4725.1830.

F. Monitoring wells and piezometers must be designed, constructed, maintained, and sealed in compliance with this subpart and chapter 4725.

G. Monitoring wells must be designed and constructed to function properly over the intended operating life of the well to prevent vertical movement of groundwater and pollutants within and along the well and drill hole, and to be pressure tight without leakage at casing joints. The casing and screen must be centered in the drill hole to ensure a continuous seal around the casing.

H. The owner or operator must ensure that in all phases of construction, drilling, installation, and completion of monitoring wells, the methods and materials used do not introduce substances that may interfere with water quality analysis.

(1) Drilling fluids, muds, foams, dispersants, disinfectants, other additives, and water from outside the well may be used only if approved by the commissioner. The commissioner must approve their use if they do not interfere with water quality analyses, or if there are no reasonable alternative methods and all feasible methods are used to remove them from the drill hole.

(2) Drilling tools and cables and well construction materials must be clean and free of oils, greases, and other contaminants.

(3) Equipment contaminated by contact with pollutants in the soil or groundwater must be thoroughly cleaned before drilling to greater depths or in other locations.

I. Where well construction materials are unsuitable for sampling some substances, the owner or operator must install two or more adjacent monitoring points constructed of different materials to allow testing of all required substances.

J. Monitoring wells and filter packs must be designed based on the site hydrogeologic characteristics including the permeability and particle size distribution of the formation material at the screen or intake interval.

(1) An owner or operator proposing a screen or intake area longer than five feet, or ten feet if the water table intersects the screen or intake, must provide a written justification to the commissioner for the additional length. The justification must describe how the monitoring well will meet the requirements of subpart 12, item A and will allow for collection of a representative water sample of a discrete hydrogeologic zone.

(2) Monitoring wells must be designed, constructed, and developed to minimize the time needed for water levels to recover after the well is purged, to allow water to flow readily into the screen or intake area with low flow velocities through the screen, and to minimize the entry of soil particles into the well.

K. Monitoring wells must be clearly and permanently marked with a Minnesota unique well number and, if different from the unique number, the identifying well name or number used in the facility plans, permit, and water quality data records.

L. Monitoring wells must be protected from damage and unauthorized access as required under part 4725.6755, except that a locked metal cap must be used. Caps must be kept locked when the well is not being monitored.

M. A monitoring well must be developed after installation and, if necessary to minimize the entry of soil particles into the well or to restore well yield, during its operating life. After development, the owner or operator must analyze unfiltered water samples from the monitoring well for suspended solids and must measure the depth of the well to verify that the well is free of accumulated sediment. The owner or operator must perform additional measures including additional development or installation of a new monitoring well, where necessary to reduce the entry of sediment into the monitoring well. For the purposes of this subpart, well development means the removal of drilling mud, cuttings, and loose sediment from the bottom of the well and from around the well screen in order to promote the movement of water into the well.

N. After development, the owner or operator must conduct a stabilization test or recovery rate test to estimate the rate and length of time the well must be pumped and the volume of water that must be removed before each sampling to ensure that water samples are representative of actual groundwater quality.

O. Accurate records must be kept of the soil or rock types encountered while installing a monitoring point. The soil-logging procedures must meet the requirements for soil borings in subpart 5, item G. Where conditions during drilling prevents collection of the required soils information, the owner or operator must notify the commissioner and request approval of a change immediately and must submit an explanation of the reason for the change with the construction record required under item P. The commissioner must approve a request for an alternative drilling method that is in accordance with subpart 5, item J. If the request submitted is not approved, the owner or operator must work with the commissioner to determine what additional information, methods, or procedures are required to satisfy subpart 5, item J.

P. Within 30 days after installing or sealing a monitoring point, the owner or operator must submit to the commissioner a record of the monitoring-point construction or sealing. The record must state the dates when the work was done.

(1) For monitoring wells, the construction record must include the soils and well construction log required under item Q; the Minnesota unique well number; a copy of any water well record submitted to the commissioner of health as required by part 4725.1851; logs from any geophysical testing done on the well; well development data; stabilization or recovery rate testing data; suspended solids analyses; any other measurements or testing done on the well including pumping, drawdown, yield, or flow direction tests; and a dated, signed, revised landfill plan sheet showing the surveyed location coordinates of the monitoring well to the nearest foot.

(2) The well sealing record must contain the well name, surveyed location, casing diameter and material type, and a Minnesota unique well number; the depth of the well measured immediately before sealing the well; the type and quantity of well seal material used; and a description of how the well seal was installed. If all information required is contained in the record required in part 4725.1851, a copy of this record suffices.

(3) The accuracy and completeness of the records submitted must be verified by a water well contractor licensed or registered under parts 4725.0475 to 4725.1800. The verification must be accompanied by the individual's name, signature, company, and license or registration number.

Q. Unless the commissioner has approved alternative methods under item O, the soils and well construction log must contain the soils information required in subpart 5, item G. The soils and well construction logs may be combined onto one log if the required information can be clearly shown. The well construction log must include a drawing of the well in vertical cross section, the identification and location of the well, and the following information regarding the well's construction:

(1) well casing material type; inside diameter; casing schedule number and standard dimension ratio or wall thickness;

(2) well screen material type, product name, and description; type and direction of alignment of openings (horizontal or vertical); opening or slot width; and type of screen bottom;

(3) the methods and materials used to join sections of casing and screen, casing to screen, and well bottom to screen;

(4) granular filter pack manufacturer and, if applicable, product name or number; mineral composition including carbonates or other soluble or reactive minerals; gradations; and quantity of filter pack material used;

(5) type of grout or other annular seal material used in accordance with part 4725.6650 subpart 2, manufacturer and product name, proportions of water and solids in the grout mix, and quantity used;

(6) elevation of the top of each casing, surveyed to the nearest 0.01 foot;

(7) elevations of the ground surface; protective concrete slab; bottom of the drill hole; top and bottom of any dedicated pump or sampling or measuring device; top and bottom of the screen or intake interval and of each different size or type of casing; each change in the diameter of

the drilled hole; and each change in filter pack, annular seal, or other backfill material, as verified by depth measurement of the top of each backfill material;

(8) methods of drilling and installation, including type of drilling rig; how the well, filter packs, and grout were installed; description of drilling fluids used; and procedures for cleaning materials or equipment;

(9) observations during drilling and installation, including any problems encountered and conditions that may affect the performance of the monitoring well; and

(10) type of dedicated pump, sampling device or measuring device including manufacturer and model number, pumping capacity, dimensions, location of intake area, how the device is secured at the desired elevation, type of material used for connecting lines or hoses, and type and location of power source.

R. Piezometers that will not be used to measure water quality must comply with items E to G, J to M, O to R, and T. They must be designed and constructed to accurately measure hydraulic head in the portion of the aquifer or formation immediately surrounding the screen or intake area and to minimize the time lag between fluctuations in head outside the piezometer and the inside water level.

S. Surface water monitoring points must comply with the following requirements:

(1) A permanent marker must be installed on land adjacent to the sampling location to clearly identify the sampling location according to the sampling and analysis plan.

(2) Monitoring stations in a river or stream must be located upstream of the area of groundwater discharge, downstream where the discharge has mixed with the stream flow, and within the area of maximum projected pollutant concentrations in the discharging groundwater.

(3) Within 30 days after establishing a surface-water-monitoring station, the owner or operator must submit to the commissioner a revised landfill plan sheet showing the location and identification of the sampling station and marker.

T. Sampling personnel must inspect monitoring points and markers each time the monitoring point is measured or sampled. The owner or operator must inspect monitoring points and markers at least annually. The owner or operator must correct damaged or obstructed monitoring points, or other conditions that interfere with the proper functioning of the monitoring point within the time periods required for monitoring wells in part 4725.6775. The owner or operator must resurvey the elevation of the top of the casing immediately after any change or repair that may have altered its elevation. If the elevation changes, the owner or operator must revise the well construction log, the sampling and analysis plan under subpart 14, item H, and the facility plans to show the new elevations, previous elevations, and the date of each change in elevation and submit the revised log and plans to the commissioner within 30 days after the change or repair.

Summary for Subp. 13: This rule establishes requirements for gas monitoring and collection management at construction and demolition debris land disposal facilities that are contingent of accepting industrial solid waste capable of generating methane or other decomposition gases. This subpart is largely consistent with Minn. R. 7035.2815, Subpart 11.

Subp. 13. Gas-monitoring and management system.

A. The owner or operator of a construction and demolition debris land disposal facility that accepts industrial solid waste which is likely to generate methane or other decomposition gases within the landfill must design and install a gas-monitoring and gas-management system according to this subpart to ensure that gases cannot travel laterally from the site or accumulate in structures. The commissioner must determine the need for an active gas management system based on the waste acceptance list under subpart 3. The gas monitoring and management requirements may change when deemed necessary by the commissioner based on the volume of gas generated at the facility, the proximity to residential or business property, or problems experienced at the facility with maintaining vegetative growth or with accumulation of gas in site structures.

B. The concentration of any explosive gas must not exceed its lower explosion limit at the property boundary or 25 percent of its lower explosion limit in and around facility structures or any other on-site monitoring point. A gas-monitoring and gas management system must be designed to meet the requirements of items C to J.

C. The gas-monitoring system, at a minimum, must be capable of monitoring gas buildup in a facility structure, at the compliance boundary, and at the property boundary. The commissioner must establish monitoring requirements, including water quality parameters that indicate gas migration in the permit and closure document and any order or stipulation agreement. Field inspection to detect odors and signs of vegetative stress, and portable or in-place probes to monitor explosive gases must be included in the monitoring system.

D. Gas monitoring probes must be placed between the disposal site and on-site structures or property lines. The probes must be placed no closer to the property line than the compliance boundary defined in subpart 6, item C, to allow for installation of control measures. If the owner or operator believes that monitoring probes are unnecessary or infeasible, the owner or operator must submit reasons to the commissioner to support this belief. The commissioner must decide on the need for monitoring probes based on the waste characteristics, fill size, surrounding soils, the water table, and the proximity to occupied buildings.

E. Probe depths and locations must be based on the soils, site geology, depth of fill, water table, and depth of frost.

F. At a minimum, each construction and demolition land disposal facility must be designed and constructed with gas vents. The number and placement of the gas vents must be designed so they are able to release gas pressure in the fill area to prevent ruptures of the cover system and to encourage vertical gas migration.

G. The gas management systems must extend below the facility to the water table or to a subsurface soil capable of impeding the movement of gas. The gas management system must be located adjacent to the fill area.

H. The size of the gas management system must be based on the volume and type of waste to be received at the site. The owner or operator must adequately size the gas management system and provide justification in the engineering report.

I. A gas monitoring program must include sampling and analysis for the amount and type of gas generated. The monitoring program must be included in the sampling and analysis plan in accordance with subpart 14 for the facility. The program must account for variation in gas

generation and migration due to climatic conditions, variation in the amount of waste in place at the facility, and the length of time the waste has been in place.

J. The sampling and analysis plan must include the techniques to be used to monitor gas at the site. Quarterly methane monitoring must be conducted in and around facility structures, at the compliance boundary, and on the facility property boundary and the results must be reported in the annual report.

Summary for Subp. 14: This rule establishes requirements for environmental monitoring at construction and demolition debris land disposal facilities. This subpart is largely consistent with Minn. R. 7035.2815, Subpart 14.

Subp. 14. Sampling and analysis. The owner or operator must ensure that sampling and analyses for pollutants are conducted in compliance with items A to Q.

A. The owner or operator must monitor groundwater quality. If required by rule, order, or stipulation agreement, the owner or operator must also monitor surface water quality, gas concentrations, and leachate quality. This monitoring must comply with parts 7035.2525 to 7035.2915, 7050.0150, and 7060.0800, and the agency-issued facility permit.

B. The commissioner must establish requirements for monitoring water quality and leachate quality for each facility, including sampling locations, sampling schedule, constituents to be analyzed, and other necessary sampling procedures. The owner or operator must provide information needed to establish the requirements and support any conditions proposed by the owner or operator. In establishing the monitoring requirements, the commissioner must consider at least the following:

(1) the presence of pollutants in previous samples, the extent and severity of groundwater and surface water effects from the facility, the facility's compliance with water quality standards, including the groundwater performance standards of subpart 6, and the evaluation under subpart 6, item G, subitem (5), if applicable; and

(2) facility location, design, and operation, composition of the waste stream and leachate, groundwater flow directions and rates, aquifer thickness, depth, and degree of natural protection, seasonal variations in water quality, surface water flow conditions, and downgradient or downstream water resources and water users.

C. Until the commissioner has approved facility-specific monitoring requirements under item B, the owner or operator must comply with the monitoring requirements of this item. Water-quality monitoring points at the facility must be sampled at least three times per year at the times specified in the facility permit. For sampling events, the owner or operator must provide the field measurements and observations listed in subitems (1) through (8) for all ground water monitoring points.

(1) Water elevation; As measured in field before pumping or bailing.

(2) Dissolved oxygen, Total; Two measurements in field during the purging process.

(3) E_h (oxidation potential); Two measurements in field during the purging process.

(4) pH; Two measurements in field during the purging process.

(5) Specific conductance; Two measurements in field during the purging process.

(6) Temperature; Two measurements in field during the purging process.

(7) Turbidity; Two measurements in field during the purging process.

(8) Appearance; Visual observation, in field and laboratory, noting conditions such as the following, if present: color, cloudiness, floating films, other liquid or gas phases, odor.

D. In addition to the constituents listed in item C, when necessary to understand potential contaminant releases from the facility or to monitor for an unlisted constituent or property likely to adversely affect public health, public safety, or the environment, the owner or operator must establish monitoring for:

(1) substances with standards or alternative standards under subpart 6 or other constituents that can adversely affect public health, public safety, or the environment if consumption or exposure occurs;

(2) constituents that can adversely affect the taste, odor, or appearance of water or otherwise adversely affect the public welfare;

(3) major dissolved ions including calcium, magnesium, sodium, potassium, bicarbonate, chloride, and sulfate, to understand the groundwater chemistry;

(4) constituents or properties of water that may be indicators of water pollution;

(5) substances that may cause analytical interference or otherwise affect water quality data interpretations;

(6) properties related to the movement of pollutants, including hydraulic head in the saturated or unsaturated zones;

(7) surface waters, bed sediments, aquatic organisms, surface water elevations, stream discharge rates, and other media associated with the surface water body to determine contaminant migration characteristics or potential harm to ecological receptors; and

(8) leachate composition and leachate release rates in the unsaturated zone beneath a land disposal facility to understand potential risks to human and ecological receptors.

E. The owner or operator must determine the initial water quality in new monitoring points and monitoring systems, including the range of seasonal variation in water quality. The commissioner must establish sampling frequencies, analytical constituents, and other conditions for the initial water quality monitoring based on the site's groundwater flow conditions and known water quality. For new facilities and expansions, background monitoring must be conducted at least quarterly until waste disposal activity begins.

F. The owner or operator must submit only samples collected by persons who have received training in groundwater sampling and, if applicable, surface water sampling. The training must cover the procedures established under items G to L for the required classes of analytical constituents, such as volatile organics or dissolved metals.

G. The owner or operator must develop and keep current a written sampling and analysis plan for the facility and must ensure the sampling and analysis plan is followed during sampling and sample analysis.

(1) The sampling and analysis plan must describe in detail the sampling and sample transportation procedures under items H to L and the analytical procedures under items M to O.

(2) The sampling and analysis plan must be submitted to the commissioner to ensure compliance with this subpart and must be included in a section of the operations manual required under part 7001.3425.

(3) The plan must be revised immediately to reflect any changes in the monitoring system, field or analytical procedures, sampling personnel, or analytical laboratory. The sampling and analysis plan must be reviewed at least annually by the owner or operator, sampling personnel, and analytical laboratory and must be revised as needed. Revisions of the sampling and analysis plan must be submitted to the commissioner upon written request or as specified in the facility permit or any order or stipulation agreement. Dated records of past sampling and analysis plan language must be retained throughout the operating life of the facility and the postclosure care period.

(4) The owner or operator must submit specific procedures and quality control requirements for commissioner approval to be used at the facility and incorporated into the sampling and analysis plan, including:

(a) criteria for the applicable data quality indicators including precision, accuracy, completeness, sensitivity, and other measures of the reliability of the field procedures and analytical results based on the analytical reference method;

(b) conditions for and frequencies of use of quality control samples, measurements, or procedures in the field or analytical laboratory;

(c) the use of gas chromatograph, mass spectrometer, or other analytical procedures to achieve positive identification and quantification of analytical constituents; and

(d) any other requirement that is necessary to ensure confidence in the monitoring results.

H. The field portions of the sampling and analysis plan must include :

(1) monitoring point locations and elevations, and the order in which monitoring points are to be sampled;

(2) all tests, measurements, and procedures needed at each monitoring point, and the order in which these procedures will be carried out;

(3) equipment and containers to be used, procedures and precautions for use of the equipment and containers, precautions to avoid introducing contaminants from outside sources into monitoring wells or samples, and when and how equipment must be cleaned between uses;

(4) procedures for purging each monitoring well before each sampling;

(5) if applicable, procedures for sampling surface water monitoring points, including exact sampling locations and depths, and for sampling leachate, and for sampling gas;

(6) quality control procedures to identify outside sources of contamination and sampling error, including types and numbers of quality control samples to be used in the field and during transport, and handling procedures for the quality-control samples;

(7) procedures and criteria for field filtration of samples;

(8) sample preservation, including preservatives and temperature control requirements;

(9) procedures for sample labeling, sample handling and storage at the facility, and transport to the laboratory;

(10) chain of custody procedures; and

(11) procedures, measurements, and observations to be recorded as required under item L.

I. The equipment, materials, and procedures used in well purging, sampling, and subsequent sample handling must minimize contamination, turbulence, water contact with air, gas exchange, depressurization, adsorption, desorption, chemical reaction, or other alteration of the composition of the water sample.

J. Before purging and sampling a monitoring well, the elevation of the water surface or potentiometric surface must be measured to the nearest 0.01 foot. Before sampling, the well must be purged using a stabilization or recovery rate test or other procedure developed based on the initial testing done under subpart 12, item N.

K. The commissioner must require filtration of samples whenever necessary to obtain sediment-free samples representative of actual groundwater conditions. Filtration must be done at the monitoring point location using in-line methods or other procedures that minimize the loss of dissolved constituents from solution.

L. At the time of sampling, the persons conducting the sampling must record the procedures, measurements, and the condition of the monitoring point. The field records must be sufficient to document whether the procedures under items G to K were followed. The records must contain the names of the persons conducting the sampling, the time and date each monitoring point was sampled, water elevations and other required field measurements, and the purging procedures and test results before sampling. The owner or operator must retain the field records throughout the operating life of the facility and the postclosure care period.

M. Water quality analyses must be performed using methods accredited by the Department of Health Environmental Accreditation Program if available. When accredited methods are not available, the owner or operator must select methods based on their performance record, reliability, sensitivity, precision, and accuracy and submit them for commissioner approval. Analytical methods and quality control procedures must be chosen to yield accurate results within the range of concentration and composition of the samples analyzed. The owner or operator must perform all sampling and analysis activities in a manner that minimizes error and assures the reliability, precision, and accuracy of the analytical results. When the limit of detection or the limit of quantitation for a substance is higher than the concentration of concern, including the standard or alternative standard established under subpart 6, the owner or operator must investigate the feasibility of attaining lower analytical limits and must report lower limits if feasible.

N. The sampling and analysis plan must contain the analytical and quality assurance procedures that will be followed for all samples originating from the facility. The plan must include written procedures covering:

- (1) responsibilities of laboratory personnel;
- (2) sample containers and preservatives, cleaning of sample containers and sampling equipment, shipping and storing samples, and sample holding times;
- (3) analytical methods and laboratory equipment used;
- (4) for each analytical constituent, the laboratory's measurements of precision and accuracy over a range of concentrations, the limit of detection, the limit of quantitation, and an explanation of how these quantities were measured;

(5) methods used to identify and prevent contamination of samples in the laboratory and during transport;

(6) analytical quality control procedures, as required in item O;

(7) methods of reviewing and assessing all data for completeness and accuracy;

(8) sample retention times after analyses are completed;

(9) inspection, testing, and preventive maintenance programs for all laboratory equipment;

(10) chain-of-custody procedures;

(11) procedures for documentation and retention of quality control results; and

(12) continuing education requirements for analytical personnel.

O. The quality-assurance program under item N must include quality control procedures to assess the reliability, precision, and accuracy of the analytical results. The sampling and analysis plan must describe and state the conditions for and frequencies of use of field and trip blanks, laboratory blanks, calibration standards, internal and external laboratory control samples, laboratory spikes, laboratory duplicates, laboratory replicates, and other quality-control procedures.

P. The owner or operator must submit monitoring results to the commissioner by the dates specified by permit or any order or stipulation agreement. The monitoring results must be accompanied by information sufficient to establish the reliability, precision, and accuracy of the reported values, including:

(1) a certification signed by the sampling personnel, analytical laboratory, and owner or operator stating whether all procedures were performed as described in the approved sampling and analysis plan; describing any departures from the procedures; and explaining why the departures were necessary;

(2) water elevations and other required field measurements and observations, dates and times when each sample was collected and received by the analytical laboratory, and the date each sample was analyzed;

(3) analytical results from all blanks;

(4) retention times and peak sizes for unidentified substances; and

(5) if required by the commissioner, any additional information needed to establish the validity of the analytical results, including precision and accuracy data from the batch of samples in which each sample was analyzed, limits of quantitation, limits of detection, results from other quality control procedures, chain-of-custody records, and field records under item L.

Q. Once a year, in accordance with part 7035.2585, the owner or operator must submit to the commissioner a summary and discussion of the monitoring results. This annual summary must:

(1) identify recent and long-term trends in the concentrations of monitored constituents and in water elevations;

(2) tabulate the analytical results to date and highlight those that exceeded the groundwater performance standards of subpart 6 or surface water quality standards in the facility permit;

(3) evaluate the effect the facility is having on groundwater and surface water quality;
and

(4) suggest any additions, changes, or maintenance needed in the monitoring system.

Summary for Subp. 15: This rule establishes construction requirements for major design features of waste management facilities, including liners, covers, monitoring systems, leachate collection, and frost protection. This subpart is largely consistent with Minn. R. 7035.2815, Subpart 12 and 7035.2885, Subpart 14. New facilities and existing unlined facilities that have reached the end of their transition period will be required to follow this subpart.

Subp. 15. Construction requirements. The construction requirements in this subpart must be incorporated into the project specifications for all major features including cell and phase construction; cover and liner systems; monitoring and management systems; leak detection; frost protection; or any other components of any containment systems. Documents outlining the requirements and standards for each project must be submitted to the commissioner for approval before construction or modification of the facility in accordance with subpart 10 and part 7001.0150, subpart 3, item H.

A. The owner or operator must construct the facility according to the approved construction sequence plan as described in part 7001.3425, subpart 2, item B, subitem (7).

B. The owner or operator must notify the commissioner at least seven days before the day construction is expected to begin on the major design features, including phase excavation, phase construction, liner installation, monitoring well installation, and the placement of final cover.

C. The construction firm's inspector must record all procedures completed during construction. The record must document that design features were constructed in accordance with this part, parts 7035.2525 to 7035.2655, and 7035.2855. The record must include pictures, field notes, and all test results.

D. The owner or operator must install a permanent benchmark on-site and show its location on the facility as-built plan. The permanent benchmark must be readily identifiable and relatively permanent, and must maintain its elevation over a long period.

E. The owner or operator must complete tests for compaction, Atterberg limits, grain size distribution, lab and field permeability, and field moisture density on liners and final covers constructed at the facility to ensure the requirements of subparts 7 to 11 are met. The owner or operator must retain a portion of the field-molded and field-compacted samples of liners and the final cover layers until the construction certification is complete.

F. Unless otherwise specified in subparts 7 to 11, the minimum permissible cover slope is three percent and the maximum permissible cover slope is 25 percent.

G. The maximum projected erosion rate must be no more than five tons per acre per year.

H. As horizontal phases are installed, the liner must be joined to existing liners.

I. Flexible membranes must be installed during dry conditions. The seams joining membrane panels must be inspected as construction proceeds. Field seams must be air tested and must be tested for tensile strength. All flexible membranes must be protected after placement. The natural layer above and below the barrier layer must be free of roots, sharp objects, rocks, or other items that might puncture the liner.

J. Electrical leak location testing must be performed according to ASTM D7007 or ASTM D8265 following placement of the drainage layer or protective layer over a natural soil barrier liner or a geocomposite drainage layer. If testing according to ASTM D7007 or ASTM D8265 cannot be performed, electrical leak location testing must be performed in accordance with ASTM D7002, ASTM D7703, ASTM D7240, or ASTM D7953 on the exposed flexible membrane liner. This item does not apply to repairs that are made after the initial electrical leak location testing. The ASTM standards are incorporated by reference in part 7035.0605.

K. A frost protection plan must be submitted when construction activities and placement of the frost protection layer occur after November 1st. The plan must detail the waste material or alternate material and depth proposed for use as frost protection. The plan must also detail the placement of thermocouples above clay soils at a frequency of one per acre with no less than two thermocouples at any given time if alternative frost protection is used. The temperature at thermocouple locations must be monitored and recorded daily until April 1st or when the frost protection layer is complete, whichever is sooner. If the temperature at any of the thermocouple locations reaches 35 degrees Fahrenheit, additional frost protection must be added as necessary to maintain temperatures above 32 degrees Fahrenheit. Additional financial assurance is required according to the contingency plan if temperatures above the clay soils fall below 32 degrees Fahrenheit.

L. Barrier liners constructed of in situ soils must be formed by scarifying and recompacting the soils.

M. All pipe used in constructing a leachate collection system must be tested for deformations. The allowable pipe deflection is five percent.

N. All pipes exiting the lined area must be fitted with anti-seep collars.

O. Vegetative growth on liners must be prevented.

P. Liner and cover slopes must be surveyed and staked during placement.

Q. A quality-control and quality-assurance program must be established for all construction projects. The program must include the tests to be completed during construction. The program also must establish the frequency of inspection and testing, the accuracy and precision standards for the tests, procedures to be followed during inspections and sample collection, credentials of on-site inspectors, and the method of documentation for all field notes including testing, pictures, and observations.

R. Clay barrier layers must be compacted in lifts that are not deeper than the feet on the equipment used to compact the liner, or six inches after compaction, whichever is less.

S. Clay barrier layers must be bladed and rolled smooth after the final lift is compacted.

T. An on-site inspector must be present during construction of liner systems and final cover.

Summary for Subp. 16: This rule establishes operational and maintenance standards for construction and demolition debris land disposal facilities. This subpart is largely consistent with Minn. R. 7035.2815, Subpart 13. Existing unlined facilities will not be required to follow the majority of this subpart.

Subp. 16. Operation and maintenance requirements. A construction and demolition debris land disposal facility must be operated by a certified operator, as provided under parts 7048.0100

to 7048.1300. A certified operator must be present during the time that the facility is open to accept waste. The facility operations must meet the requirements of items A to Z.

A. Solid waste must be spread and compacted in layers two feet or less in depth or to the extent possible based on the waste type.

B. The owner or operator must design and operate the landfill to bring the areas without cover up to final grade as soon as possible in accordance with the construction sequence plan described in part 7001.3425, subpart 2, item B, subitem (7).

C. All facilities must be sloped to promote surface water drainage according to subpart 7.

D. The waste must be covered in accordance with subpart 8.

E. Intermittent and intermediate cover material sufficient to comply with subpart 8 must be maintained at the site.

F. Upon reaching final permitted waste elevations, cover must be installed according to subpart 8, item E.

G. Each fill phase must be outlined with grade stakes and approved by the commissioner for compliance with subpart 15 before the deposition of any waste.

H. The slopes of the working face area must be no steeper than three to one (horizontal to vertical).

I. A separation distance of 200 feet must be maintained between the fill boundaries and the site property line. The owner or operator may propose a distance less than 200 feet for commissioner approval when the distance:

(1) allows for environmental monitoring in accordance with subparts 6 and 12;

(2) allows for the implementation of corrective actions to maintain compliance with groundwater quality standards at the compliance boundary;

(3) is based on performing all operation and maintenance procedures in accordance with the approved, facility plans; and

(4) remains protective of human health and the environment.

J. Resource recovery operations must be confined to the designated areas approved in the facility permit. Recovered material storage must be kept as small as practical, must be marked with signs, and must not interfere with normal construction and demolition debris disposal operations.

K. All waste and recovered material at the site must be stored according to part 7035.2855.

L. An odor management plan must be submitted if the facility accepts construction and demolition debris fines produced from a sorting or mechanical process or other process that produces construction and demolition debris fines that are less than six inches in size. Odor nuisance conditions must not occur due to the acceptance of construction and demolition debris fines.

M. A facility must not be used to store more than 10,000 waste tires aboveground or to process more than 500 waste tires unless a waste tire facility permit is obtained by the owner or operator as required under chapter 9220.

N. The facility must be inspected according to the schedule approved by the permit for at least the following:

(1) uncontrolled vegetative growth;

(2) soil erosion on slopes and completed areas;

(3) vandalism on the monitoring systems;

(4) rodents and burrowing animals;

(5) malfunctions in the leachate and gas detection and collection systems; and

(6) settlement in completed areas.

O. All leachate must be sampled and analyzed according to subparts 11 and 14.

P. The leachate collection system must be cleaned annually or as specified in the operation and maintenance plan.

Q. The amount of leachate collected must be monitored and recorded.

R. All vegetated areas with intermediate or final cover must be mowed or maintained at least two times per year, or as specified in the operation and maintenance plan, to control vegetation in accordance with subpart 8.

S. Corrective actions must be implemented to repair any conditions not in compliance with this part and parts 7035.2525 to 7035.2655.

T. Sampling and analysis of groundwater must be completed according to subparts 12 and 14.

U. Gas monitoring if applicable must be completed according to subpart 13.

V. Procedures for operating the facility during wet weather conditions must provide protection for liners, covers, and other design features that might be impacted by facility operations.

W. The fill area must be surveyed annually before November 1 by a land surveyor or professional civil engineer registered in Minnesota. An updated existing conditions plan must be submitted with the annual report required in part 7035.2585. The plan must show permitted cells, the elevations of completed fill areas, areas partially filled, all pertinent structures, and all design features that changed in elevation due to facility operations or settlement. The remaining fill capacity must be calculated and shown on the plan.

X. All trenches or area fills must be staked with permanent markers. The edge of waste markers and locations must be noted on all plan sheets.

Y. All lined areas must have at least six feet of solid waste in place on the liner by December 31 of each year. No disposal may take place on uncovered areas after December 31 without approval by the commissioner based on results of liner integrity testing as required in subpart 15.

Z. All closure costs expended according to part 7035.2625, all postclosure care cost expenditures made according to part 7035.2645, and all corrective action expenditures made according to part 7035.2615 must be recorded and maintained in the operating record.

Summary for Subp. 17: This rule outlines the actions to be taken by the owner or operator in response to emergencies, environmental releases, or unexpected situations at construction and demolition debris land disposal facilities. This subpart is largely consistent with Minn. R. 7035.2815, Subpart 15. New facilities and existing unlined facilities that have reached the end of their transition period will be required to follow this subpart.

Subp. 17. Contingency action.

A. The owner or operator must implement any actions necessary to repair site features or to control, recover, or treat polluted groundwater or surface waters and explosive, nuisance, or toxic

gases. The actions must include the measures dictated by the situation and outlined in the contingency action plan developed under part 7035.2615.

B. The contingency action plan developed under part 7035.2615 must include repairing:

- (1) clogged collection systems;
- (2) monitoring wells or probes;
- (3) cover systems; and
- (4) liners or holding areas.

C. If the contingency action plan did not anticipate the level of effort required to protect human health and the environment, actions to bring the facility into compliance with parts 7035.2525 to 7035.2805 must include any necessary work beyond that identified in the contingency action plan.

Summary for Subp. 18: This rule establishes the requirements for closing and maintaining a construction and demolition debris land disposal facility after it has reached its final waste elevation.

Subp. 18. Closure and postclosure care.

A. Closure of a discrete cell, group of cells, or partial cell must be started according to the approved construction sequence plan after reaching final permitted waste elevations. After completion of closure activities, the owner or operator must submit a closure certification to the commissioner that complies with this subpart and part 7035.2635, subpart 3, indicating that closure has been completed according to parts 7035.2625 and 7035.2635.

B. The largest area at final elevation without final cover can be no more than ten acres.

C. Facilities with a discrete cell, group of cells, or partial cells not at final grade after 2 years without accepting waste must complete closure activities of that area within 180 days, unless other leachate mitigation measures are utilized per the approved construction sequence plan.

D. If a facility closes before completing the proposed final cover contours, the owner or operator must submit a revised closure plan and must construct all final contours with a minimum three percent and a maximum 25 percent slope.

E. The commissioner must determine if the landfill has been closed in accordance with the facility closure plan and parts 7035.2625 and 7035.2635 and if the closure has been documented in the closure certification in accordance with part 7035.2635. If the initial closure certification is not approved, the owner or operator must work with the commissioner to determine what additional information, construction activities, or corrective actions are required for the closure certification to document the requirements of the closure plan have been met. The owner or operator must submit additional closure certifications if the commissioner deems it necessary to enable review before approving the final closure certification. Upon receiving approval of the final closure certification from the commissioner, the postclosure care period begins.

F. After final closure, the owner or operator must comply with all postclosure care requirements under parts 7035.2645 and 7035.2655, including maintenance and monitoring throughout the postclosure care period as specified in this part, part 7035.2655, and the closure document. The owner or operator must:

(1) restrict access to the facility by use of gates, fencing, or other means, unless the site's final use allows access;

(2) maintain the integrity and effectiveness of the final cover, including making repairs to the final cover system to correct the effects of settling; subsidence; gas and leachate migration; erosion; root penetration from vegetation, trees and saplings; burrowing animals; lack of vegetation on the cover; or other events;

(3) maintain and monitor the gas- and water-monitoring systems and comply with all other applicable requirements of subparts 13 and 14;

(4) continue to operate and maintain the leachate collection and removal system based on the postclosure care plan;

(5) prevent run-on and runoff from eroding or otherwise damaging the final cover;

(6) protect and maintain surveyed benchmarks used in complying with subpart 15;

(7) inspect the facility at least twice annually to determine the extent of settling, subsidence, erosion, or other events, and document the inspection;

(8) submit an annual report to the commissioner as required in part 7035.2585 describing the present conditions and corrective actions taken or needed for subitems (1) to (7); and

(9) complete repair work within 30 days after discovering a needed repair.

G. Before termination of the postclosure care period, the permittee must undergo a postclosure exit evaluation, conducted by the agency. Termination of the postclosure care period shall require approval from the commissioner based on gas, leachate, groundwater and surface water monitoring results and any other pertinent information required to protect human health and the environment.

H. A facility must continue postclosure care for a minimum of 30 years after the date of completing closure. A facility may terminate the postclosure care period in less than 30 years but no sooner than 20 years, if the facility receives approval to terminate the postclosure care period according to item H and enters into an environmental covenant and easement in accordance with Minnesota Statutes chapter 114E and section 116.07, subdivision 4l.

I. Before termination of the postclosure care period, the permittee must submit a custodial care plan that outlines the care, inspections, and maintenance of the waste containment and management systems after termination of the postclosure care period for approval by the commissioner. This plan must identify the activities to be performed and the frequency of these activities while the facility is in the custodial care status. The commissioner must approve a plan that achieves the following:

(1) Maintaining the integrity and effectiveness of the final cover, including making repairs to the final cover system to correct the effects of settling; subsidence; erosion; root penetration from vegetation, trees and saplings; burrowing animals; lack of vegetation on the cover; or any other events that damage or degrade the effectiveness of the cover system to contain or shed precipitation or other water from entering the waste containment system;

(2) Restricting access to the facility by use of gates, fencing, or other means at the site, unless the site's final use allows access; and

(3) Compliance with an environmental covenant and easement, in accordance with Minnesota Statutes chapter 114E and section 116.07, subdivision 4l, or other institutional controls associated with the property.

Summary for Subp. 19: This rule sets forth the financial assurance requirements for the closure, postclosure care, and contingency actions of construction and demolition debris land disposal facilities. New facilities and existing unlined facilities that have reached the end of their transition period will be required to follow this subpart

Subp. 19. Financial assurance.

A. The owner or operator of a facility must demonstrate compliance with this subpart within 180 days of placing waste in a lined cell by submitting documentation of compliance to the commissioner.

B. The owner or operator must establish financial assurance for closure, postclosure care and contingency action at the facility in compliance with all applicable requirements in parts 7035.2705 to 7035.2805, excluding 7035.2750.

C. The owner or operator must establish financial assurance for closure, postclosure care, and contingency action at the facility by using one or more of the standardized financial assurance mechanisms specified in parts 7035.2705 to 7035.2745 or alternatively may propose a nonstandardized financial assurance mechanism under part 7035.2751 for approval by the commissioner. The facility must maintain financial assurance as long as the facility poses a potential environmental risk to human health, wildlife, or the environment, as determined by the commissioner following an assessment conducted under part 7035.2655.

D. If a change in the owner or operator occurs, a modification to the permit must be requested as required in part 7001.0190, subpart 2. Additionally, the previous owner or operator must comply with the financial requirements of parts 7035.2705 to 7035.2805, excluding 7035.2750, until the new owner or operator has demonstrated compliance with parts 7035.2705 to 7035.2805, excluding 7035.2750, to the commissioner. The new owner or operator must demonstrate compliance within 180 days after the date of the change in ownership or control of the facility. Upon demonstration of compliance to the commissioner, the commissioner must notify the previous owner or operator in writing that the owner or operator is no longer required to comply with parts 7035.2705 to 7035.2805, excluding 7035.2750.

E. Third party cost estimates for closure, postclosure care, and contingency action must be updated annually as required by part 7035.2585, item F, and submitted on a form prescribed by the commissioner. "Third party" means a party that is not the facility owner or operator and that is independent of the facility owner or operator.

F. If the owner or operator establishes a trust fund mechanism according to parts 7035.2705 to 7035.2720, the owner or operator must calculate the monthly payment using a ten-year period or the operating life of the facility, whichever is less.

G. Financial assurance mechanisms must be updated annually and submitted to the commissioner with the annual report required by part 7035.2585.

Summary for Subps. 20 and 21: This rule sets forth the requirements for the use of property during custodial care for a construction and demolition debris land disposal facility. The landowner must conduct custodial care in perpetuity according to the custodial care plan or an environmental covenant and easement. This applies to all new and existing facilities operating after rule effective date.

Subp. 20. **Custodial care status.** The landowner of a construction and demolition debris land disposal facility must:

A. Commence custodial care immediately after termination of the postclosure care period is approved by the commissioner;

B. Continue to conduct custodial care at the facility in perpetuity according to an approved custodial care plan or an environmental covenant and easement according to Minnesota Statutes chapter 114E and section 116.07, subdivision 4l; and

C. Maintain the facility waste containment systems.

Subp. 21. **Custodial care use of property.** The landowner must not allow use of a construction and demolition debris land disposal facility while in custodial care status that disturbs, damages, or degrades the integrity of final covers, liners, or any other components of any containment system, or the function of the facility's monitoring system unless the use of the facility is approved by the commissioner and is:

A. necessary to the proposed use of the property and will not cause a violation of the standards outlined in subpart 6 and part 7035.2565; or

B. necessary to remedy a violation of the standards in subpart 6 and part 7035.2565.