



## **Closure Plan**

### **Ash Disposal Facility**

**Otter Tail Power Company – Hoot Lake Plant**

#### **Introduction**

This report presents the Closure Plan for the Ash Disposal Facility (landfill) at the Hoot Lake Plant in Fergus Falls, MN. This Closure Plan has been written to satisfy § 257.102(b)(3) of the Coal Combustion Residual Rule and is an amendment to the previous Closure Plan dated October 17, 2016.

#### **Closure Procedures § 257.102(b)(1)(i)**

Closure of the landfill will be in-place. Fill progression of the landfill occurs from east to west, and the active portion of the landfill is kept as small as practicable to reduce the generation of leachate and control fugitive dust.

Closure will initiate as sufficient areas of final grades are achieved. CCR will be brought to grade and compacted to provide a smooth finish capable of supporting the final cover system.

The landfill final cover profile will be constructed similar to a Municipal Solid Waste (MSW) cover utilizing Linear Low-Density Geomembrane as the primary barrier.

Details on schedule, final cover design, notification timelines, and certification can be found below.

#### **Quantity of CCR § 257.102(b)(1)(iv)-(v)**

The lined portion of the landfill has an ultimate capacity of 773,300 cubic yards.

The largest area requiring final cover is 3.8 acres.

#### **Closure Schedule § 257.102(b)(1)(vi)**

Closure is dependent on the quantity of CCR placed within the landfill. The design of the facility is such that the final grades will be achieved in individual phases as quickly as possible, thus allowing final cover to be placed sequentially. Closure will occur from east to west. The MPCA-issued permit requires that if an area is filled up to its final waste grade *or* if an area containing waste is left idle for at least 120 days, that area shall receive either final cover as prescribed in this plan, or it will receive intermediate cover as required by the MPCA solid waste permit. If intermediate cover is used it shall consist of a minimum of 12 inches of compacted soil on the CCR to shed clean stormwater and reduce leachate generation. Areas that utilize intermediate

cover will receive final closure once activity resumes on the landfill and the area has reached final grades.

Final closure is estimated to occur in 2022. Final closure activities will take place sequentially as portions of the landfill are filled and brought to final grade in accordance with this plan and with MPCA specifications. § 257.102 (e) (1)(i) specifies that the owner or operator of a CCR unit must commence closure activities no later than 30 days after the last known receipt of waste or removing the last amount of CCR from the unit for beneficial use. Closure of the landfill will be completed as specified in § 257.102(f)(i). Please see Figure 1 and Table 1 for more details.

**Table 1**  
**CLOSURE SCHEDULE**

Phase	Estimated Date of Closure Commencement
Remainder of Cell 2 - Final Landfill Closure	Summer 2022

**Closure Performance Standard § 257.102(d)**

Post closure infiltration will be minimized or eliminated by constructing an MSW landfill final cover system as described MPCA waste management facility rules. The final cover profile from bottom to top will consist of:

- 40 mil textured linear low-density polyethylene (LLDPE) Geomembrane barrier (alternative infiltration layer) (§ 257.102(d)(3)(ii)(A))
- A minimum two-foot thick coil cover (erosion layer) consisting of:
  - 12 inches of granular drainage layer (soil) with a permeability of  $1 \times 10^{-3}$  centimeters per second or faster to promote subsurface drainage off the geomembrane)
  - 6 inches of rooting soil
  - 6 inches of topsoil (soil capable of sustaining vegetative growth)
- Vegetative cover (§ 257.102(d)(3)(i)(C))

The landfill will feature a 40 mil LLDPE geomembrane infiltration layer and a 24-inch erosion layer in lieu of 18 inches of earthen material and six inches of erosion layer. The permeability of 40 mil LLDPE is less than 18 inches of earthen material.

All final cover phases will be designed and constructed to capture and convey stormwater off the landfill, down to stormwater basins. Run-off from the active area will be handled in accordance

with § 257.81, and will collect and contain the run-off from a 25-year, 24-hour storm event. Stormwater modeling software will be used to verify the performance of the final cover stormwater control system.

Future impoundment of water will be prevented by placing the CCR at a 4:1 Horizontal to Vertical (4H:1V) slope along the side slopes of the landfill and a minimum 2% slope along the top to shed stormwater off closed portions of the landfill. All 4H:1V slopes will utilize textured LLDPE geomembrane. Granular drainage material located on the 4H:1V slopes will be placed from the toe of the slope upward. Drain tile will be installed along the toe of the slope to reduce the saturation of the drainage layer, improving veneer stability.

Maintenance of the final cover system will be minimized by establishing and supporting vegetation. Erosion control products appropriate for the slope and expected stormwater run-off velocity will be implemented to assist vegetative growth. Areas of concentrated run-off will utilize riprap or turf reinforcement mat. Once vegetation is established, mowing will occur to prevent the growth of woody vegetation.

The landfill final cover and bottom liner system both feature a polyethylene geomembrane. Flow through the geomembrane is essentially zero and thus both are equivalent.

Final cover geomembrane installation will be continuously monitored by on-site construction quality assurance staff to verify that construction is performed in accordance with specifications and that testing is conducted in accordance with the Geosynthetic Institute standard specifications for LLDPE geomembrane (GM17) or geomembrane seams (GM19).

Once the final cover geomembrane is installed, tested, and all of the quality control documentation is complete, a GPS guided dozer utilizing as-built geomembrane elevation data will place the granular drainage layer of the geomembrane.

An MPCA-prepared Statement of Need and Reasonableness (SONAR) regarding state rules regulating waste management facilities determined that a final cover system consisting of a 40 mil LLDPE geomembrane with 24-inches of cover soil, adequate slopes, and stormwater control systems is capable of preventing migration of stormwater through the final cover system.

The disruption of the integrity of the final cover system is minimized by using LLDPE geomembrane, which can elongate more than 800% before breakage occurs. This accommodates settling and subsidence while maintaining the integrity of the infiltration barrier.

**Notification of Cell/Phase Closure § 257.102(g)**

Closure of the Hoot Lake Plant Ash Disposal Facility will occur as indicated in Table 1 and Figure 1 (below). The MPCA commissioner will be notified 90 days prior to final closure. In addition to the MPCA notification, a notification of intent to close will be added to the facility's operating

record. In accordance with § 257.102(g), the notice of intent to close will include a certification by a qualified professional engineer that the design of the final cover system meets the requirements of § 257.102(d)(3). The notice of intent to close will also be posted on the CCR website as specified by § 257.107(i). The estimated date for final closure is presented in Table 1 and Figure 1, but is subject to change.

**Certification of Final Phase of Closure § 257.102(h)**

Within 30 days of completion of closure activities, a closure documentation report will be submitted to the MPCA and placed in the operating record. This will be signed by an authorized officer of Otter Tail Power Company and a professional engineer registered in Minnesota. The report will state that the phase has been closed in accordance with MPCA-approved plans and specifications and in accordance with this closure plan § 257.102(d)(3)(iii); § 257.107(i).

Testing of the various components of the cover will be conducted and documented in accordance with the Construction Quality Assurance/Quality Control Plan in effect at the time of final closure, and in accordance with all applicable rules. The closure and construction documentation will be submitted to the MPCA, placed in the facility operating record, and posted on the CCR website within 30 days of completion of closure. The report will contain record drawings, testing data and a description of the construction process with photographs.

Upon final closure of the entire facility, a detailed description, including plat, will be recorded with the Otter Tail County Recorder. The description will include types and location of wastes, depth of fill and other information that may be of interest to future land owners. A copy of the Record Drawings will be submitted to the Otter Tail County Recorder and the MPCA.

Following final closure of the landfill, the facility will be subject to the post-closure care as required by the MPCA and federal regulations. Please see “SW-211 POST-CLOSURE CARE PLAN” for more details.

The Otter Tail Power Company contact after the landfill receives its final closure will be:

Manager, Environmental Services  
Otter Tail Power Company  
215 South Cascade Street  
PO Box 496  
Fergus Falls, MN 56538-0496  
Phone: 218.739.8200

**Deed Notation § 257.102(i)**

A notation will be made on the deed or other instrument normally examined during a title search. In accordance with § 257.102(i)(2) the notation will include record drawings and in perpetuity

notify potential purchasers that: a) the land has been used as a CCR unit, and b) its use is restricted under the post-closure care requirements as provided by § 257.104(d)(1)(iii). A copy of the notation carrying the Otter Tail County Recorder's seal will be included with the certification.

**Amendment of Closure Plan § 257.102(b)(3)**

If any event or change affects the plan, a modified Closure Plan will be prepared and submitted to the MPCA, will be included in the facility's operating record and posted on the CCR website. This applies to any change in the Operation and Maintenance Plan, facility design, or estimated year of closure. At a minimum, the Closure Plan will be reviewed and updated, if necessary, every two years beginning with this version of the Closure Plan § 257.102(b)(3)(ii).

**Certification**

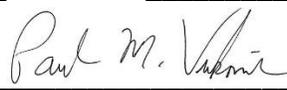
I hereby certify under penalty of law that this report was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Name Paul Vukonich

Title Principal, Environmental Services

PE License No. 50857

State Minnesota

Signature 

Date September 18, 2017

**FIGURE 1 – SW-211 CLOSURE SCHEDULE**

