



Closure Plan
Ash Disposal Area
Big Stone Plant

Introduction

This Closure Plan (Plan) has been written for the Big Stone Plant's (BSP) Ash Disposal Area (ADA) to comply with the South Dakota Department of Agriculture and Natural Resources (DANR)-issued permit and 40 CFR 257. This Plan outlines procedures for in-place closure of the ADA.

Disposal of coal combustion residuals from the BSP has been regulated by the DANR since 1975 in its on-site ADA. The landfill was constructed in native clay soils but does not meet the requirements of §257.71. Future lateral landfill expansions will be constructed in accordance with §257.72.

The design of the landfill required phases to be built and closed sequentially. The first phase of the landfill was originally put into service in 1975. During 2014 the last phase to receive final cover prior to the effective date of the Coal Combustion Residual rule was covered and the current fill phase was opened.

CLOSURE PROCEDURES § 257.102(b)(1)(i)-(ii)

Closure of the landfill will be in-place. Fill progression of the landfill occurs from south to north, 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 area 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.

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

QUANTITY OF CCR § 257.102(b)(1)(iv)-(v)

The ADA has an ultimate capacity of 5 million cubic yards.

There are 28 acres of final cover that will be installed prior to final closure. Each closure phase will be approximately 8 acres in size.

CLOSURE SCHEDULE § 257.102(b)(1)(vi)

Closure is dependent on the quantity of CCR of ash produced and beneficially used. 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 the south to north.

Final closure is estimated to occur in 2050. 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 DANR requirements. §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 – ADA Closure Schedule

Closure Area	Estimated Year of Closure
Portion of Active Area	2024
Portion of Active Area	2035
Remiander of Active Area	2050

CLOSURE PERFORMANCE STANDARD § 257.102(d)

Post closure infiltration will be minimized or eliminated by constructing a compacted clay final cover system. The final cover profile from bottom to tip will consist of:

- 24 inches of compacted clay (§257.102(d)(3)(i)(B))
- 6 inches of suitable plant growth material (soil capable of sustaining vegetative growth) (257.102(d)(3)(i)(C))
- Vegetative cover (257.102(d)(3)(i)(C))

The 24-inch thick compacted clay cover is thicker than the prescribed 18-inches of earthen infiltration layer. In addition, the permeability of the compacted clay cover is less than the permeability of the native clay soil base liner in accordance with (§257.102(d)(3)(i)(A)).

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 filling 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.

Maintenance on 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 rip-rap or turf reinforcement mats. Once vegetation is established, mowing will occur to prevent the growth of woody vegetation.

NOTIFICATION OF CELL/PHASE CLOSURE § 257.102(g)

Closure of the ADA will occur as indicated in Table 1 and Figure 1 (below). A notice of intent (NOI) will be submitted to DANR 90 days prior to final closure. A NOI will also be placed in the facility's operating record and posted to the CCR website. The NOI 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 estimated dates for closure of the remaining cells is presented in Table 1 and Figure 1, but are subject to change.

CERTIFICATION OF FINAL PHASE OF CLOSURE § 257.102(h)

Within 30 days of completion of closure activities of the phases, a closure documentation report will be submitted to DANR and placed in the operating record. The report will be signed by an authorized officer of Otter Tail Power Company and a professional engineer registered in South Dakota. The report will state that the landfill has been closed in accordance with DANR approved plans and specification and in accordance with this closure plan (§257.102(d)(3)(iii) and § 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 DANR, placed in the facility's 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 Grant County Recorder. The description will include types and location of wastes, depth of fill and other information that may be of interest to future landowners. A copy of the Record Drawings will be submitted to the Grant County Recorder and the DANR.

Following final closure of the landfill, the facility will be subject to the post-closure care as required by the DANR and federal regulations. Please see "BIG STONE PLANT ADA POST-CLOSURE CARE PLAN" for more details. The Otter Tail Power Company contact after the landfill receives its final closure will be:

Closure Plan
Otter Tail Power Company
October 2021

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)

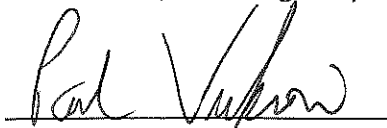
A notation will be made on the deed or other instrument normally examined during a title search. In accordance with § 257.102(i)(2) the notation will include record drawings and in perpetuity notify potential purchasers that: a) the land has been used as CCR unit, and b) its use is restricted under the post-closure care requirements as provided by § 257.104(d)(1)(iii). A copy of the notation carrying the Grant 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 DANR, will be included in the facility's operating record and posted on the CCR website. This applies to any change in the Operations 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 § 257.102(b)(4)

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.



Paul Vukonich, PE
License No. 13547

10-14-21
Date

FIGURE 1 – ASH DISPOSAL AREA CLOSURE SCHEDULE

