

Appendix G

Post-Closure Plan

Omaha Public Power District
Nebraska City Generating Station
NC2 Ash Disposal Area

January 2019



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Professional Engineer Certification

"I hereby certify that this Post-Closure Plan for the NC2 Ash Disposal Area at the Omaha Public Power District Nebraska City Station meets the requirements of the Coal Combustion Residual Rule 40 CFR 257.104. I am a duly licensed independent Professional Engineer under the laws of the State of Nebraska."

Print Name: GARRETT M. WILLIAMS
Signature: 
Date: 1/4/19
License #: E-15124



My license renewal date is December 31, 2020.

1 Site Identification

1.1 Introduction

On April 17, 2015 the U.S. Environmental Protection Agency (EPA) published the final rule for the regulation and management of coal combustion residuals (CCR) under the Resource Conservation and Recovery Act (RCRA). The rule – effective on October 19, 2015 – applies to electric utilities and independent power producers that fall within NAICS code 221112, and the facility produces or stores CCR materials in impoundments or landfills. This regulation applies to Omaha Public Power District's (OPPD's) Nebraska City Generating Station.

OPPD has a two-unit (Unit 1 and Unit 2) fossil fuel-fired generating plant at the Nebraska City Station (Station) southeast of Nebraska City, Nebraska. This Station has two existing CCR landfills that are permitted under the current NDEQ Title 132 regulations for fossil fuel combustion ash disposal area (the NC1 Ash Disposal Area and NC2 Ash Disposal Area). The NC2 Ash Disposal Area is a 40.7 acre lined landfill, with available capacity for approximately 3,936,000 cubic yards of fossil fuel combustion ash. NC2 Ash Disposal Area continues to receive CCR.

This Post-Closure Plan, prepared in accordance with Nebraska Department of Environmental Quality (NDEQ) Title 132, Chapter 4 and updated to comply with the federal CCR rule, provides a description of monitoring and maintenance activities, frequencies, and post-closure use of the NC2 Ash Disposal Area. This Post-Closure Plan must be amended whenever there is a change in the operation of the CCR landfill that would substantially affect the written post-closure plan or after post-closure activities have commenced, unanticipated events necessitate a revision of the written post-closure plan. OPPD will not implement modifications to the design or operations of the NC2 Ash Disposal Area that would result in modifications to this Post-Closure Plan without prior approval from NDEQ.

1.2 Facility Identification

Facility:	NC2 Ash Disposal Area
NDEQ Permit No.:	NE0204421
Owner Contact Address:	Omaha Public Power District Environmental Services 444 South 16 th Street Omaha, Nebraska 68102-2247

1.3 Legal Description

The Station is located 5.5 miles southeast of Nebraska City, along the west shore of the Missouri River. The Station property covers approximately 1,600 acres of river floodplain in portions of Sections 30 and 31, Township 8 North (T8N), Range 15 East (R15E), and Sections 25 and 36, T8N, R14E. The property map is provided under Locational Criteria Data (Permit - Appendix K-1). The NC2 Ash Disposal Area is located in the S $\frac{1}{2}$, SE $\frac{1}{4}$, Section 25, T8N, R14E, in Otoe County, Nebraska, and the north 350 feet of the N $\frac{1}{2}$, NE $\frac{1}{4}$, of Section 36, T8N, R14E in Otoe County, Nebraska, containing approximately 40.7 acres for the total disposal area footprint.



1.4 Post-Closure Documentation, Notifications and Certification

OPPD will prepare, directly or through a contract, the documentation of post-closure care in accordance with NDEQ Title 132, Chapter 4. In accordance with current state regulations, the results of all groundwater monitoring will be reported to the NDEQ. During the post-closure care period, annual groundwater monitoring and corrective action reports required by the CCR rule will be posted to the CCR website and notification submitted to NDEQ.

In accordance with the CCR rule requirements, the following post-closure notifications will be provided to the Director of NDEQ:

- Notification that Post-Closure Plan is available and posted to the CCR website, and any amendment thereof
- Notification of completion of post-closure care, including certification by qualified professional engineer
- Notification of completion must be provided within 60 days of completion of post-closure care and include certification by a professional engineer registered in the State of Nebraska verifying that post-closure care has been completed in accordance with this or any subsequently amended Post-Closure Plan and the requirements of the CCR rule 40 CFR 257.104.

At the completion of the post-closure care period, OPPD will provide a notification as described in above.

2 Post-Closure Plan

The Post-Closure Plan will be implemented immediately after approval of completion of final closure in accordance with NDEQ Title 132, Chapter 4 and the federal CCR rule. OPPD will conduct, or cause to be conducted, post-closure care for the NC2 Ash Disposal Area for 30 years as required by the federal CCR rule. If at the end of the post-closure care period the NC2 Ash Disposal Area is under a groundwater assessment monitoring program, then post-closure care shall be continued until the groundwater monitoring returns to detection monitoring in accordance with 40 CFR 257.95.

No person shall excavate, disturb the final cover, or remove any deposited materials from the closed NC2 Ash Disposal Area without having received prior approval from NDEQ. If such excavations are required, reference should be made to appropriate sections of NDEQ Title 132.

2.1 Planned Use During Post-Closure Period

The closed NC2 Ash Disposal Area will be designated as open space during the post-closure period and access will be controlled via site fencing and signage. The property is anticipated to continue as a power generating station, and will be managed to not disturb the integrity of the final cover or function of the monitoring systems.

2.2 Monitoring Schedule

This Post-Closure Plan includes a monitoring schedule, monitoring procedures, and maintenance activities, separated into component systems that are monitored and cared for during the post-closure care period. For monitoring and maintenance purposes, the NC2 Ash Disposal Area has been divided into the following components:

- Final Cover System
- Vegetative Support
- Erosion Controls
- Storm Water/Drainage System
- Groundwater Monitoring System
- Access Controls

Table 1 provides a proposed frequency of monitoring activities based on the CCR rule required 30-year post-closure period. Visual inspections will be conducted by OPPD personnel or a qualified contractor. In order to facilitate any necessary repair work, inspections will generally be conducted during the spring and fall of each year and/or after severe storms, as needed. Monitoring and maintenance activities will be adjusted in accordance with the season, climate, and weather conditions. During each inspection, descriptions of the condition of the closed facility will be recorded and placed in the operating record maintained by OPPD. Table 2, located at the end of this plan, provides a general inspection checklist for recording the condition of the NC2 Ash Disposal Area. Damages to the monitoring components will be documented.

Table 1 Post-Closure Inspection Schedule

Activity/Year	Frequency, per year ¹					
	1	2	3	4	5	6-30
Final Cover System	Q	Q	S	S	S	A
Vegetative Support	Q	Q	S	S	S	A
Erosion Controls	Q	Q	S	S	S	A
Stormwater/Drainage System	Q	Q	S	S	S	A
Groundwater Monitoring System ²	S	S	S	S	S	S
Access Controls	A	A	A	A	A	A

Notes:

¹ S = 2 times per year; A = 1 time per year, Q= 4 times a year

² Detection monitoring will monitor for 40 CFR 257 Appendix III constituents, and assessment monitoring, if required will comply with the CCR rule 40 CFR 257 and NDEQ. Refer to the Groundwater Sampling and Analysis Plan (Permit – Appendix E).

Maintenance activities may or may not be periodically required, depending on the exact situation encountered. Any detected damages or deterioration will be assessed as to the cause and extent before repairs begin. Repairs will occur at the earliest possible time following detection. Temporary repairs may be performed until permanent repairs can be installed. Photographic records will be made, whenever possible, of repair activities for documentation. Repair work will be done in accordance with the Construction Quality Assurance Plan (Permit – Appendix I). All post-closure period repairs will be documented and placed in the operating record.

2.3 Final Cover System

Inspections of the final cover system include walking the closed NC2 Ash Disposal Area looking for evidence of the following items:

- Settlement and subsidence
- Surface erosion
- Vegetative damage
- Cracks or desiccation
- Biotic intrusion of the cover (burrowing rodents or animals)

Visual inspections for subsidence can include walking the cover after a major rainstorm or the beginning of snowmelt and thaw and looking for puddles or ponding. If large or radical changes in the ground surface elevation occur, these are strong indicators of settlement, which may result in damage to the infiltration layer and ponding of water or improper surface drainage. Areas observed to have significant ponding of water on the cap should be investigated for cap integrity and repaired. Eroded and cracked cover materials will be repaired and additional erosion controls (such as erosion control matting, mulching, silt fence, or other measures) installed if necessary. Burrowing rodents will be trapped and removed as necessary to ensure final cover integrity.

Repair of the final cover in damaged areas should include the following:

- Replacing soils by type
- Proper filling and compaction of the infiltration layer (to permeability no greater than 1×10^{-5} cm/sec)
- Repairing/patching the geomembrane and/or geocomposite drainage net
- Re-grading as necessary
- Re-establishing vegetation

All repair work shall be in accordance with the Construction Quality Assurance Plan (Permit – Appendix I). The location of all damage in the cap and the repair procedure should be clearly documented. Annual maintenance requirements may be affected by weather and other variables. The level of maintenance should decrease with time and the stability of the vegetative support system. Maintenance repairs will be seasonally adjusted based on weather and growing seasons.

2.4 Vegetative Support

Vegetation will be visually inspected for the following:

- Volunteer vegetation (such as weeds, shrubs, and trees)
- Bare spots
- Drought stress
- Insects or bugs
- Other damage or die-off

Condition of the vegetative cover will be documented as part of the scheduled inspection(s) and periodically after rainstorms for failure, and then repaired as necessary. Noxious weeds and woody vegetation will be removed on an annual basis. Bare spots or areas of cracking and vegetative die-off may be indicators of other problems, such as rodents, improper soil type (such as highly alkaline), erosion damage, or other factors. After the root problem has been corrected, vegetative cover will be re-established in these areas.

Because native grasses are used for vegetative cover, mowing is anticipated to be minimal, with an anticipated frequency of mowing two times annually for financial assurance estimating purposes.

2.5 Erosion Controls

The erosion controls will be visually inspected for the following:

- Sedimentation levels
- Erosion rills near control structures
- Damage to erosion control measures such as terraces, berms, silt fences, and hay bales
- Sedimentation leading to drainage structures or impacting vegetation

Terraces and letdown structures will be visually inspected in accordance with Table 1. Maintenance of erosion controls can include removal of accumulated sedimentation and repair or replacement of damaged erosion controls.

2.6 Storm Water/Drainage System

Periodic visual inspection of the storm water/drainage system should include the following areas:

- Culverts
- Ditches
- Monitoring/discharge structures
- Other drainage control structures

Inspection will identify any accelerated erosion in a particular area and differential settling of drainage control structures. Inspections will also look for sedimentation, clogs or obstructions, deterioration, and vegetative intrusion.

Damaged drainage control structures will be repaired, replaced, or restored to original conditions. When drainage structures become plugged or silt filled, they will be cleaned by water jetting or similar means. Silt-filled drainage channels will be cleaned, regarded and vegetated, as necessary to maintain drainage capacity.

2.7 Groundwater Monitoring System

During the semi-annual sampling events, the groundwater monitoring wells will be visually inspected for the following:

- Erosion or biotic intrusion around the base
- Condition of concrete pad
- Condition of protective casing
- Damage to locking well caps or locks
- Integrity of well seals/ well casing
- Integrity of any well markers or protective structures

Areas of erosion at groundwater monitoring wells will be filled with compatible soil materials, graded to drain, and covered with vegetative growth, as necessary. Damaged well caps, concrete pads, and well seals will be repaired and/or replaced. Dedicated pumps that are not working or are performing poorly will be repaired or replaced, or alternatively replaced by a different sampling method approved by the NDEQ. Wells damaged below grade levels may need to be evaluated further and possibly replaced.

Sampling frequency shall be in accordance with Table 1 and will be reported to the NDEQ on a semi-annual basis and a groundwater monitoring and corrective action report prepared annually in accordance with the federal CCR rule. All sampling, packaging, shipping, and testing should conform to the Groundwater Sampling and Analysis Plan (Permit – Appendix E).

At the conclusion of the post-closure monitoring period, all monitoring wells may be abandoned in accordance with the requirements of the State of Nebraska Department of Health Title 178.

2.8 Access Controls

Access will be controlled throughout the post-closure period. Access control structures and signage will be visually inspected for the following:

- Cuts or other damage in fencing
- Damage to fence posts
- Integrity of locks and gates
- Damage to or deterioration of (or missing) posted signs and warnings

All corrective actions, e.g., repair or replacement of damaged fencing, gates, and signs, will be completed within 60 days of noting the deficiency or an alternative schedule developed.

Table 2 Post-Closure Inspection/Maintenance Checklist

TASK		REMARKS/ACTIONS
Final Cover System		
	Indications of Settlement	
	Erosion of Cap	
	Exposed CCR	
	Litter	
	Cracks or Dessication	
	Evidence of Biotic Intrusion	
Vegetative Support		
	Vegetation Condition/Bare Spots	
	Volunteer Vegetation (weeds, woody growth)	
Erosion Controls		
	Terraces – Clear of Debris	
	Terraces – Erosion	
	Letdown Structures – Clear of Debris	
	Letdown Structures – Erosion	
	Condition of Other Erosion Controls (Silt Fences, Hay Bales, Etc.)	
	Sedimentation Leading to Drainage Structures	
Storm Water/Drainage System – Perimeter Channels		
	Perimeter Ditches – Clear of Debris	
	Perimeter Ditches – Erosion	
	Discharge Structure or Culverts Condition – Clear of Debris/Damage	
Groundwater Monitoring System		
	Condition of protective casing, locking cap and lock, concrete pad, well seal/well casing, protective bollards/posts, and erosion or biotic intrusion.	See well sampling field forms for conditions of wells
Access Controls		
	Fencing/Fence Posts Condition	
	Integrity of Locks and Gates	
	Missing or Damaged Signs	

Date: _____

Inspector Signature: _____