

McElroy's Run Impoundment Closure and Post-Closure Plans

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Pleasants Power Station
Pleasants County, West Virginia

October 2016

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Certification/Statement of Professional Opinion

The Closure and Post-Closure Plan (Plan) for the Pleasants Power Station McElroy's Impoundment was prepared by GAI Consultants, Inc. (GAI). The Plan was based on certain information that, other than for information GAI originally prepared, GAI has relied on but not independently verified. Therefore, this Certification/Statement of Professional Opinion is limited to the information available to GAI at the time the Plan was written. On the basis of and subject to the foregoing, it is my professional opinion as a Professional Engineer licensed in the State of West Virginia that the Plan has been prepared in accordance with good and accepted engineering practices as exercised by other engineers practicing in the same discipline(s), under similar circumstances and at the same time and in the same locale. It is my professional opinion that the Plan was prepared consistent with the requirements of the United States Environmental Protection Agency's "Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments," published in the Federal Register on April 17, 2015 with an effective date of October 19, 2015.

The use of the words "certification" and/or "certify" in this document shall be interpreted and construed as a Statement of Professional Opinion and is not and shall not be interpreted or construed as a guarantee, warranty or legal opinion.



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Engineering Manager

This closure plan is intended to meet the requirements of 40 CFR § 257 but can be amended at any time [pursuant to § 257.102(b)(3)] due to a number of factors, including but not limited to: specified provisions in 40 CFR § 257, federal or state regulatory changes, and facility operational changes.

1.0 Introduction

The McElroy's Run Impoundment (Impoundment) is located approximately one-half mile east-southeast of the Pleasants Power Station (Station), a coal-fired electric generating station located near the community of Willow Island in Pleasants County, West Virginia (WV). The Impoundment is permitted as a solid waste facility according to the West Virginia Department of Environmental Protection (WVDEP) Permit No. 0079171. The Impoundment receives coal combustion residuals (CCR) in the form of flue gas desulfurization (FGD) scrubber by-product.

The embankment is permitted separately under WV Dam Safety Regulations by the Office of Water Resources. The embankment is currently permitted for operations under Certificate of Approval No. 07302.

2.0 Closure Plan

This plan was prepared in accordance with the applicable requirements of the United States Environmental Protection Agency (USEPA) 40 CFR Part 257, Criteria for Classification of Solid Waste Disposal Facilities and Practices (CCR Rule). This plan sets forth the materials and techniques that will be used to complete closure activities of the Impoundment by placement of a final cover system pursuant to the requirements in §257.102(d).

2.1 McElroy's Run Impoundment Closure Plan Overview

The Closure Plan includes the following:

- Closure Plan narrative;
- Final Cover System description including methods and procedures to install the system, and a description stating how the system will achieve the performance standards set forth by §257.102(d);
- Estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit;
- Estimate of the largest area of the CCR unit ever requiring final cover at any time over the CCR unit's active life; and,
- Closure Plan schedule for completing all activities necessary to satisfy the closure criteria, including an estimate of the year in which all closure activities for the CCR unit will be completed.

2.2 Closure Plan Narrative

The Impoundment is to be closed by leaving the CCR in place and installing a final cover system and stormwater collection features. This will be accomplished by meeting the requirements of §257.102 and any additional requirements imposed by the WVDEP.

At final closure, a final cover system and drainage channels will be installed. Prior to the installation of the final cover system, free liquids will be removed or solidified, and the remaining waste will be graded and stabilized to support the final cover system. As necessary, additional fill will be used to create a grade with positive drainage. The final cover system will be graded to prevent ponding of stormwater and vegetated.

The closure performance standards stated in §257.102(d) will be achieved in the following manner:

- Free liquid will be removed from the impoundment or solidified. The CCR material will be graded to promote positive drainage and stabilized (as necessary), and the final cover system will be placed over the graded surface to minimize infiltration of water into the CCR and releases of CCR, leachate, or impacted run-off to the ground or surface waters, as required by §257.102(d)(1)(i);
- The final cover system soil layer will be graded in order to preclude the probability of future impoundment of water and sediment, as required by §257.102(d)(1)(ii);
- Stability of the final cover system will be provided by stabilizing the CCR (as necessary) prior to final cover system installation, and placement of the engineered cover soil layers during cap construction. Movement or sloughing of the final cover system will be prevented during the closure and post-closure periods by minimizing the slope, as required by §257.102(d)(1)(iii); and
- This design reduces the need for further maintenance through grades that minimize or prevent erosion, and with a vegetation mix that, once well established, forms a thick, self-sustaining layer that minimizes woody plant growth in accordance with the requirements of §257.102(d)(1)(iv).

2.3 Final Cover System

This section provides a description of final cover system components, site preparation, and installation.

2.3.1 Cover Components

The proposed final cover system consists of the following (from the bottom layer to the top layer):

- ▶ An infiltration layer composed of eighteen inches of compacted soil;
- ▶ An erosion layer composed of six inches of cover soil; and,
- ▶ Vegetation (mulch, fertilizer, and seed).

The proposed final cover system meets the final cover system design requirements set forth in §257.102(d)(3)(i).

2.3.2 Site Preparation and Final Cover System Installation

Site preparation for the Impoundment final cover system will comply with applicable regulations. Free liquids will be removed from the Impoundment or solidified and the CCR will be graded and stabilized (as necessary) to minimize settling. The CCR will be graded to provide positive drainage toward the drainage facilities. Eighteen inches of soil will be placed and compacted. Six inches of cover soil will be placed, then seeded, fertilized, and mulched.

2.3.3 Infiltration Layer Installation

The infiltration layer, composed of soils including clay, will be compacted to achieve a permeability of 1×10^{-5} cm/sec. Prior to infiltration layer placement, the CCR shall be fine graded, compacted, and stabilized.

2.3.4 Erosion Layer Installation

An erosion layer, consisting of six inches of earthen material, will be placed as part of the final cover system on top of the infiltration layer. The erosion layer will support vegetation to stabilize the soil and reduce erosion of the infiltration layer during the post-closure period.

2.3.5 Final Seeding

The erosion layer will be seeded with a grass mix native to northern WV.

2.3.6 Stormwater Run-on/Run-off Controls Installation

Erosion and sedimentation controls will be incorporated into the construction of the final cover system. Surface water management and erosion controls will be provided by sloping the final cover to channels, which will drain through the principal spillway and ultimately out to the Ohio River.

2.4 Estimates for Final CCR Volume and Closure Area

This section provides an estimate of the maximum quantity of CCR material expected to be contained during impoundment closure and an estimate of the largest area ever requiring a final cover system.

2.4.1 Maximum CCR Inventory Estimate

The Impoundment is expected to contain 28,000,000 cubic yards of CCRs at full capacity.

2.4.2 Largest Area Requiring Final Cover System

The maximum area to be capped and covered will include the entirety of the impoundment. The maximum area will be approximately 253 acres.

2.5 Closure Schedule

The estimated annual CCR disposal rate per the 2014 Annual Operations Report is 593,000 tons. The Impoundment is expected to have capacity until 2023-2024. Based on actual CCR material placement rates and beneficial use opportunities, the impoundment may operate beyond 2024.

Closure activities will commence within 30 days after the Impoundment receives the final known volume of CCR [§257.102(e)(1)(i)], by providing the WVDEP a notice of intent to close along with a certification of assurance by a qualified professional engineer that the design of the final cover system meets the requirements of §257.102(d)(3)(iii).

The final cover system will be installed when the Impoundment is at full capacity, as FirstEnergy expects the impoundment life may be extended due to actual disposal rates or beneficial use. FirstEnergy anticipates applying for extensions of the closure timeframe allowed under §257.102(f)(2)(ii)(B) as needed to complete the closure. It is anticipated that it may take more than the initial five years to close the Impoundment, due to the time required to:

- Remove free standing water;
- Stabilize and grade CCR material as necessary to support final cover system installation;
- Install the final cover system, including soil and vegetation, over approximately 253 acres;
- Install new channels for erosion and sediment control; and
- Construction seasons limited to approximately eight months also contribute to the extended closure timeframe.

Assuming the Impoundment reaches near full capacity in 2024, closure activities would be projected to be completed between 2029-2039 (depending on the number of extensions required).

Once the Impoundment closure is complete, a professional engineer will verify and certify that closure has been completed in accordance with the Closure Plan [§257.102(f)(3)]. Within 30 days of completing the Impoundment closure, a notification of closure will be prepared and include the professional engineer's certification of completion [§257.102(h)].

2.6 Stormwater and Leachate Controls

- The final cover system will be graded for a post settlement slope of at least 1%, which minimizes surface erosion and the possibility of impounding water, toward surface water drainage channels. The surface water drainage channels will be constructed to drain toward the existing Decant Tower No. 2. With appropriate state approvals, the decant tower will discharge the water from the closed impoundment through the principal spillway pipe and eventually to the Ohio River. Additional rip-rap protection, if necessary, at the principal spillway pipe discharge point will further protect against erosion.

3.0 Post-Closure Plan

This post-closure plan was prepared in accordance with the CCR Rule, and details the maintenance activities to be performed for a period of 30 years, as required by §257.104(d).

3.1 CCR Post-Closure Plan Overview

The post-closure plan, per §257.104(d)(1)(i through iii), must include the following information:

- Description of the monitoring and maintenance activities, including the frequency that activities will be performed;
- Name, address, and telephone number of the person to contact about the facility during the post-closure care period; and,
- Description of the planned use of the property during the post-closure care period.

3.2 Post-Closure Plan Narrative

The major items to be maintained and monitored during the post-closure care period are:

- The final cover system;
- drainage features;
- fencing and gates; and,
- the groundwater monitoring system.

These activities are discussed in detail in the next section. Repairs to the final cover system will be made, as necessary, to mitigate erosion or settlement of the erosion and infiltration soil layers. The final cover system will be inspected at least annually for the 30-year post-closure period. Stormwater drainage features will be de-silted and cleared of debris to maintain capacity, as needed. The groundwater monitoring system will be monitored for the full 30 years of post-closure.

3.3 Monitoring and Maintenance Activities

Following closure of the CCR unit, the owner or operator must conduct post-closure care for 30 years, which consists of at least the following:

- Maintaining the integrity and effectiveness of the final cover system, including making repairs as necessary to correct the effects of settlement, erosion, or other events, and preventing run-on and run-off from eroding or otherwise damaging the final cover; and,

- Maintaining the groundwater monitoring system and monitoring the groundwater in accordance with the requirements of §257.90 through §257.98.

3.3.1 Final Cover Surface

The final cover surface will be visually inspected by a qualified person at least annually during the post-closure period. The site will also have a cursory inspection during groundwater sampling events. The surface of the Impoundment will be inspected for erosion, thinning vegetation cover, animal burrows, woody vegetation, and cracking in the soil cover which could indicate surface movement. Any observed woody vegetation will be removed. The final cover system will be repaired if any of the aforementioned conditions are observed.

3.3.2 Drainage Features

Stormwater drainage channels and principal spillway will be visually inspected for debris, siltation, and vegetative growth that are reducing channel capacity. The under drain pipe discharges will be visually inspected for debris, siltation, and signs of drainage. The drainage features, including the principal spillway pipe, will be cleaned and repaired, if necessary, if any of the aforementioned conditions are observed.

3.3.3 Fencing and Gates

Site access will be controlled during closure and post-closure using the methods approved for use during site operation. The main entrance gate is constructed of a steel frame and posts anchored in concrete. Gates will remain locked at all times when the site is unattended to prevent unauthorized access to the site.

Fencing and gates will be inspected annually for signs of unauthorized entry, damage caused by tree growth or falling limbs/trees, broken or bent posts, and to verify functionality of any gates. Any damage to the access control features observed will be repaired.

3.3.4 Groundwater Monitoring System

Groundwater monitoring will be performed in accordance with the requirements of §257.90 through §257.98 for the duration of the post-closure period.

3.4 Site Contact Information

The operator can be reached during the post-closure period at the following address and phone number:

FirstEnergy Environmental Department
800 Cabin Hill Drive
Greensburg, PA 15601
(724) 837-3000

An email address is not provided due to potential employee turnover over the 30 year post-closure period.

3.5 Proposed Post-Closure Property Use

The proposed post-closure land use for this facility is anticipated to be for the permanent storage of residual waste and as open green space with controlled access. This is consistent with the surrounding existing and planned use by FirstEnergy. The site is located in rural Pleasants County in an area that sees little foreseeable need for alternative land uses. There are no support activities needed to achieve the proposed land use. After closure, FirstEnergy expects the site to be utilized as an "unmanaged wildlife habitat."

4.0 References

United States Environmental Protection Agency (USEPA), 40 CFR Parts 257 and 261, Hazardous and Solid Waste Management Disposal System; Disposal of Coal Combustion Residual from Electric Utilities, Final Rule; April 2015.

Civil & Environmental Consultants, Inc., Application for Renewal, Solid Waste Permit No. WV0079171, McElroy's Run Disposal Facility; February 2007.

GAI Consultants, Inc., Solid Waste/NPDES Permit Application No. WV0079171, Solid Waste Portion, McElroy's Run Disposal Facility; September 1990.

GAI Consultants, Inc., Potential Impact of Draft EPA CCR Regulation, Summary of Findings, McElroy's Run Impoundment; July 2010.

GAI Consultants, Inc., Permit Renewal Application, Solid Waste/National Pollutant Discharge Elimination System Water Pollution Control Permit No. WV0079171; January 2014.

Allegheny Energy Supply Company, LLC, Annual Operation Report 2014, Pleasants Power Station's McElroy's Run Disposal Site; September 2015.