CARDINAL OPERATING COMPANY

Cardinal Power Plant
Bottom Ash Pond Complex

Amendment of Existing Closure Plan

Revision 0

October 19, 2020

Issue Purpose: Client Comment

Project No.: 13770-005

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TABLE OF CONTENTS

1.0 INTRODUCTION & PURPOSE

Federal CCR Rule Reference: 40 CFR 257.102(b)(3)

In accordance with 257.102(b)(3), this document is an amendment of the initial written closure plan for the Bottom Ash Pond (BAP) Complex at the Cardinal Power Plant in Brilliant, Ohio.

The BAP Complex consists of two surface impoundments: the larger Bottom Ash Pond in the north (North Pond) and the smaller Recirculation Pond in the south (South Pond), together the two ponds are managed as a single Coal Combustion Residual (CCR) Unit. Both ponds are currently used to store and treat the station's bottom ash transport water and miscellaneous low-volume waste streams. In September 2016, American Electric Power prepared the initial written closure and post-closure plans for the BAP Complex. The 2016 closure plan stated that the BAP Complex (both South and North Ponds) would be closed by leaving CCR in place and installing a final cover system. Accordingly, the 2016 post-closure plan described the monitoring and maintenance activities that would be performed after the BAP Complex was closed.

Due to a forthcoming change in the operation of the BAP Complex, both initial closure and post-closure plans need to be amended. The Cardinal Operating Company, who operates the Cardinal Power Plant, intends to retrofit the South Pond as documented in South Pond Retrofit Plan. This document is to amend the initial closure plan for the North Pond.

2.0 NARRATIVE DESCRIPTION

Federal CCR Rule Reference: 40 CFR 257.102(b)(1)(i)

Pursuant to the requirements of 40 CFR 257.102(c), the Cardinal Operating Company has elected to clean close (closure by removal) the North Pond by removing all CCR materials in this pond at the time of closure and decontaminating all areas affected by releases from this pond (if any). Cardinal Operating Company will ensure groundwater monitoring concentrations of controlled constituents do not exceed the groundwater protection standard established pursuant to 257.95(h).

3.0 CCR REMOVAL & DECONTAMINATION PROCESS

Federal CCR Rule Reference: 40 CFR 257.102(b)(1)(ii)

After the retrofit of the South Pond has been completed, the connection to North Pond will be closed or removed, and the South Pond will be back in service for CCR water handling only. A temporary low volume waste (LVW) impoundment along with a temporary geomembrane liner will be constructed in the north end of the North Pond, so LVW streams can be isolated to the north end of the North Pond. Then the clean close operation at the North Pond will start from its south end.

The key procedures of the clean closure operation for the North Pond will be carried out in phases and are outlined below:

- Dewater the south area of the North Pond to facilitate removal of the CCR stored therein. All water discharge will meet the requirements of the applicable National Pollutant Discharge Elimination System (NPDES) permit.
- Remove the existing metal cleaning waste tank and related piping and other components. Remove all CCR material in the south area and transport it to the Cardinal Power Plant's on-site CCR landfill, FAR I Landfill, for final disposal. Conventional excavation and earthmoving equipment will be used.
- Any contaminated soils and sediments in the south area of the North Pond will also be removed. Inspections of the clean subgrade will be performed and certified by a professional engineer.
- Install an earth dike just south of the temporary LVW impoundment slope to separate the existing ash deposit from entering the cleaned south area. A permanent geomembrane bottom liner is then placed in the south area and over the separation earth dike.
- Reroute the gravity drained LVW streams and other necessary piping to the lined south area of the North Pond.
- Dewater the temporary LVW impoundment and the area north of the separation dike to facilitate removal of the CCR in the north area.
- Remove the temporary liner and all CCR material including any contaminated soils and sediments from the north area. All areas affected by CCR releases will be decontaminated.

- Groundwater sampling and testing to verify the groundwater monitoring concentrations of controlled constituents do not exceed the groundwater protection standards established pursuant to 40 CFR 257.95(h).

As areas of the North Pond are clean closed, certifications will be prepared by a qualified professional engineer to certify the clean closure of the individual areas of North Pond.

It is noted that the LVW waste streams are not considered to be CCR and thus, the North Pond will no longer be considered a CCR surface impoundment.

4.0 ESTIMATED MAXIMUM AMOUNT OF CCR

Federal CCR Rule Reference: 40 CFR 257.102(b)(1)(iv)

The estimated maximum inventory of CCR ever on-site over the active life of the North Pond is conservatively assumed to be the pond's capacity: approximately 242 acre-ft.

5.0 CLOSURE SCHEDULE

Federal CCR Rule Reference: 40 CFR 257.102(b)(1)(vi)

Table 1 lists the major milestone activities with their estimated schedule necessary to complete the closure operation of the North Pond.

Table 1 – Planning Level Schedule for Closure of North Pond

Milestone Activity	Estimated Duration	Estimated Completion Year[1]
Complete Engineering/Design	9 Months	2021
Obtain Ohio EPA Closure Permit to Install (PTI)	6 Months	2021
Dewater the South Area of the North Pond	3 months	2022
Remove Existing Waste Tank and all CCR Material and Any Contaminated Soils and Sediments	9 Months	2022
Install a Separation Earth Dike with a Permanent Geomembrane Bottom Liner in the South Area	3 Months	2022
Reroute the Gravity Drained LVW Streams and Other Necessary Piping to the Lined South Area of the North Pond	2 Months	2022
Dewater the Temporary LVW Impoundment and the Area North of the Separation Dike	1 Months	2022
Remove the Temporary Liner and All CCR Material in the North Area	2 Months	2022
Decontaminate All Areas, Structures, and Components Affected by CCR Releases	2 Months	2022
Sample and Analyze Groundwater	1 Month	2022
Obtain Final Certification of Completion of Closure by a Qualified Professional Engineer	1 Week	2022

1. These dates are based on a preliminary schedule for demonstrative purposes and are subject to change.

6.0 CERTIFICATION

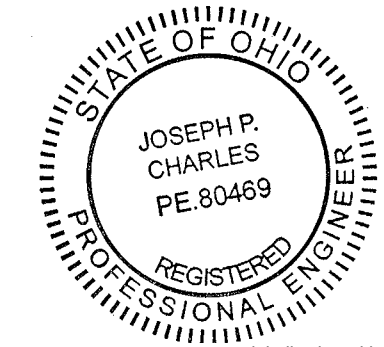
Federal CCR Rule Reference: 40 CFR 257.102(b)(4)

This document meets the requirements for amendment of a written closure plan pursuant to 40 CFR 257.102(b)(4).

I certify that this document was prepared by me or under my supervision and that I am a registered professional engineer under the laws of the State of Ohio.

Certified By: Joseph P. Charles Date: October 19, 2020

Seal:



Digitally signed by Joseph P. Charles
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