



Cardinal Power Plant

Hazard Potential Classification Assessment

Existing Bottom Ash Pond Complex

Issue Purpose: Use, Rev. 0

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PREPARED BY:

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1 PURPOSE

In accordance with 40 CFR 257.73(a)(2) this document provides the 2021 periodic hazard potential classification assessment for the existing Bottom Ash Pond (BAP) Complex at the Cardinal Power Plant. The BAP consists of two surface impoundments, the Bottom Ash Pond and Recirculation Pond, which are interconnected and managed as a single coal combustion residual (CCR) unit. The previous hazard potential classification assessment for the BAP was completed and uploaded to the Plant Operating Record on August 1, 2016. Pursuant to 40 CFR 257.73(f), this periodic hazard potential classification assessment was conducted and completed within five years of the previous assessment.

2 APPLICABLE CCR REGULATION

To determine the hazard potential classification of the BAP, the following excerpts from 40 CFR Part 257 Subpart D (Federal CCR Rule) are applicable:

- **§257.73(a)(2):**
“Periodic hazard potential classification assessments.
 - (i) The owner or operator of the CCR unit must conduct initial and periodic hazard potential classification assessments of the CCR unit according to the timeframes specified in paragraph (f) of this section. The owner or operator must document the hazard potential classification of each CCR unit as either a high hazard potential CCR surface impoundment, a significant hazard potential CCR surface impoundment, or a low hazard potential CCR surface impoundment. The owner or operator must also document the basis for each hazard potential classification.
 - (ii) The owner or operator of the CCR unit must obtain a certification from a qualified professional engineer stating that the initial hazard potential classification and each subsequent periodic classification specified in paragraph (a)(2)(i) of this section was conducted in accordance with the requirements of this section.”
- **§257.53:**
“Hazard potential classification means the possible adverse incremental consequences that result from the release of water or stored contents due to failure of the diked CCR surface impoundment or mis-operation of the diked CCR surface impoundment or its appurtenances. The hazardous potential classifications include high hazard potential CCR surface impoundment, significant hazard potential CCR surface impoundment, and low hazard potential CCR surface impoundment, which terms mean:
 - (1) High hazard potential CCR surface impoundment means a diked surface impoundment where failure or mis-operation will probably cause loss of human life.
 - (2) Low hazard potential CCR surface impoundment means a diked surface impoundment where failure or mis-operation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the surface impoundment owner's property.
 - (3) Significant hazard potential CCR surface impoundment means a diked surface impoundment where failure or mis-operation results in no probable loss of human life, but can cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns.”

3 ASSESSMENT

This assessment considered hypothetical dike breaches at any of the existing dikes that form the BAP, regardless of potential causes and/or apparent dike stability. This demonstration considered the impoundment to be filled with liquid at the time of the hypothetical dike failure.

3.1 Potential for Loss of Human Life

The following items were considered when evaluating the potential for a general loss of human life should a hypothetical failure or a mis-operation occur at the existing BAP:

- Absence of nearby residences, businesses, schools, and public buildings,
- Absence of nearby campgrounds and public spaces,
- Absence of nearby public roads and highways below the impoundment elevation, and
- Proximity to rail lines.

Because State Highway 7 is over 200 feet west and is 2 to 13 feet higher in elevation than the BAP, a loss of human life along this highway is not probable during a postulated dike failure at the BAP.

The rail line operated by Norfolk Southern is approximately 150 feet west and nominally 5 to 10 feet lower in elevation than BAP's western dike. The absence of passenger traffic as well as the apparent usage of the railroad indicate that the loss of human life is not probable from a hypothetical failure of the BAP dikes.

Based on the preceding observations, a loss of human life in areas accessible to the general public is not probable should a hypothetical failure or mis-operation occur at the BAP.

The following items were considered when evaluating the potential for loss of lives for the power plant personnel should a hypothetical failure or a mis-operation occur at the BAP:

- Proximity to the Cardinal Power Plant's power block and balance-of-plant structures,
- Frequency of power plant personnel activity near the CCR surface impoundment, and
- Topography of the ground surface between the CCR surface impoundment and the power plant's facilities.

The BAP is not located near any significant power plant facilities or other areas regularly occupied by power plant personnel. Therefore, a loss of power plant personnel lives is not probable should a hypothetical failure or mis-operation occur at the BAP.

Per the preceding observations, a loss of human life is not probable should a hypothetical failure or mis-operation occur at the BAP.

3.2 Potential for Economic & Environmental Losses

The following items were considered when evaluating the risks of economic loss and environmental damage should a hypothetical failure or a mis-operation occur at the BAP:

- Proximity to the Ohio River, and potential disruption of the downstream lock that facilitates navigation of the Ohio River,
- Potential disruption of lifeline facilities, such as electrical transmission towers,
- Potential disruption of or damage to the Norfolk Southern freight rail lines, which are west of the BAP, and

- Topography of the ground surface between the CCR surface impoundment and the aforementioned features.

Considering the eastern dikes of the BAP coincide with the western bank of the Ohio River, CCR could be deposited into the Ohio River and the immediate downstream area, should a hypothetical failure or mis-operation occur at the BAP.

The environmental damage to the Ohio River and other areas immediately downstream, including the Pike Island Lock and Dam, that could result from a hypothetical failure or mis-operation at the BAP is enough alone to justify classifying the BAP as a significant hazard potential, even without accounting for the aforementioned potential economic losses.

3.3 Summary of Hazard Potential Classification Assessments

Hypothetical failures or mis-operations of the BAP result in no probable loss of human life. However, hypothetical failures or mis-operations of the BAP could result in environmental damage to the Ohio River and other areas immediately downstream that are beyond the Cardinal Operating Company's property.

A significant hazard potential classification has been assigned to the BAP at the Cardinal Power Plant in accordance with 40 CFR 257.73(a)(2). This classification concurs with the hazard potential classification assigned to the BAP in the previous assessment that was completed on July 29, 2016.

4 CERTIFICATION

I certify that

- This Periodic Hazard Potential Classification Assessment was prepared by me or under my supervision,
- The work was conducted in accordance with §257.73(a)(2)(i), and
- I am a registered professional engineer under the laws of the State of Ohio.

Certified by: James T. Perry

Date: July 22, 2021

