

2021 CCR Surface Impoundment Hazard Potential Classification Assessment



Revision 0
October 5, 2021
Issue Purpose: Use
Project No.: 10572-140

1.0 PURPOSE

AES Indiana's Petersburg Generating Station ("Petersburg" or the "Station") has three existing coal combustion residual (CCR) surface impoundments, Ponds A, A', and C, that are regulated by the U.S. Environmental Protection Agency's "Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments," 40 CFR Part 257 Subpart D, also referred to herein as the Federal CCR Rule. Ponds A and A' are currently being closed in-place in accordance with 40 CFR 257.102(d), and AES Indiana completed closure for Pond C in May 2021. In accordance with 40 CFR 257.73(a)(2), this report documents the 2021 hazard potential classification assessment for Ponds A, A', and C at Petersburg. Pursuant to 40 CFR 257.73(f), this hazard potential classification assessment was conducted and completed within five years of the previous assessment.

2.0 APPLICABLE FEDERAL CCR RULE REGULATION

The 2021 hazard potential classifications for Ponds A, A', and C are determined in accordance with the following excerpt from 40 CFR 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.

3.0 ASSESSMENT

The bases of the 2016 hazard potential classifications for Ponds A, A', and C as documented within the 2016 hazard potential classification assessment are reviewed to determine if any changes have occurred since

2016. Identified changes are then evaluated to determine if the ponds' previous hazard potential classifications warrant an adjustment. Where no changes are noted for a given input, or where identified changes are determined to have no impact to the results and conclusions of the 2016 hazard potential classification assessment, the previous evaluation of that input is considered to still be valid.

In instances where changes to one or more factors used as the bases for the 2016 hazard potential classifications are identified (*e.g.*, downstream development that was not present in 2016), hypothetical dike breaches are considered at each of the three CCR surface impoundments to evaluate the impacts that a release of CCR and CCR wastewater would have on the identified factor(s). These hypothetical dike breaches are evaluated regardless of potential causes and/or apparent dike stability. When evaluating a hypothetical dike breach at a subject CCR surface impoundment, the solid waste materials in the given CCR surface impoundment are conservatively considered as an equivalent volume of liquid (*i.e.*, the ash pond is assumed to be entirely filled with liquid).

As previously stated, AES Indiana completed closure for Pond C in May 2021 in accordance with 40 CFR 257.102(d). Pond C was closed in a manner that precludes the probability of future impoundment of water and included measures that provide for major slope stability to prevent sloughing or movement of the final cover system during the closure and post-closure care period. However, the Federal CCR Rule does not explicitly state when hazard potential classification assessments are no longer required for existing CCR surface impoundments that have been closed in accordance with the closure criteria promulgated by 40 CFR 257.102. As such, the hazard potential classification for the closed Pond C is assessed herein.

3.1 SUMMARY OF 2016 HAZARD POTENTIAL CLASSIFICATION ASSESSMENT

When conducting the 2016 hazard potential classification assessment, the following features at, near, or downstream of Ponds A, A', and C were considered:

- Buildings or areas where people reside, work, or congregate (Station facilities, private residences, private businesses, public buildings or spaces, *etc.*).
- Transportation infrastructure (roads, railroads, *etc.*).
- Bodies of water (rivers, creeks, lakes, *etc.*).
- Lifeline facilities (*e.g.*, electrical transmission towers and poles).

In the 2016 hazard potential classification assessment, it was noted that no private residences, private businesses, or public buildings or spaces near, or downstream of Ponds A, A', and C would be impacted by a failure or mis-operation at any of the ponds such that a loss of human life would be probable. Although a hypothetical failure at Pond A's western dike would cause water to flow into areas where several Petersburg facilities are located – including the Station's cooling towers and switchyard – the depth of water in these areas was estimated to be approximately one foot. Per the Federal Emergency Management Agency's

“Federal Guidelines for Inundation Mapping of Flood Risks Associated with Dam Incidents and Failures,” a flood depth of one foot or less caused by a dike breach is not considered to be a risk to human life. Thus, it was concluded that a loss of human life would not be probable should a hypothetical failure or mis-operation occur at Pond A’s western dike.

The 2016 hazard potential classification assessment also concluded that no public roads, railroads, or highways downstream of Ponds A, A’, and C would be impacted by a hypothetical failure at any of the CCR surface impoundments such that a loss of human life would be probable. While the eastern dikes of Pond A and Pond C are adjacent to a rail line operated by the Indiana Southern Railroad, a review of publicly-available information on the railroad published by its owner, Genesee & Wyoming, Inc., indicated that trains traveling along the rail line predominately carry agricultural commodities and coal and do not provide public transportation services. Moreover, it was noted that Pond A’s eastern dike is effectively incised into the ground surface at the rail line and, therefore, would not pose a threat to the rail line. Therefore, it was determined that a loss of human life along the Indiana Southern Railroad line would be unlikely should a hypothetical failure or mis-operation occur at Ponds A or C.

Based on the preceding evaluations and observations, the 2016 hazard potential classification assessment concluded that a loss of human life is not probable should a hypothetical failure or mis-operation occur at Ponds A, A’, or C. However, the assessment concluded that the contents released from hypothetical breaches at Ponds A’ and C could be deposited into Lick Creek and eventually spread into the White River or be deposited directly into the White River. Both scenarios would cause environmental damage to the White River and other areas immediately downstream. It was also determined that a hypothetical failure or mis-operation of Pond C along the pond’s eastern dike could disrupt the Indiana Southern Railroad services and/or damage the rail line, which could potentially result in economic losses. Finally, a hypothetical failure at Pond A’s western dike would release the pond’s contents into the adjacent Station areas (switchyard, cooling towers, etc.), resulting in economic losses. Therefore, Ponds A, A’, and C were classified as significant hazard potential CCR surface impoundments.

3.2 CHANGES IN BASES FOR 2016 HAZARD POTENTIAL CLASSIFICATIONS

Significant modifications have been made to Ponds A, A’, and C since the 2016 hazard potential classification assessment was completed for these three CCR surface impoundments. By the fall of 2018, AES Indiana had initiated closure of Ponds A, A’, and C and, therefore, ceased using these three CCR surface impoundments to manage any of Petersburg’s wastestreams or indirect stormwater flows. In May 2021, AES Indiana certified Pond C as closed. As of the 2020 annual inspection performed in accordance with 40 CFR 257.83(b), structural fill was being placed and graded in Ponds A and A’ to support the final cover system that will be installed over both ponds. At that time, the combined storage capacity between

both ponds had been reduced to less than 5% of the active volume considered in the 2016 hazard potential classification assessment.

Given the significant modifications made to date during the closure process to reduce the available storage capacities within Ponds A and A' and eliminate the ability to impound water within Pond C, a reassessment of the hazard potential classifications for Ponds A, A', and C based on the ponds' current closure status is warranted.

3.3 2021 HAZARD POTENTIAL CLASSIFICATION ASSESSMENT

Other than the significant modifications made to Ponds A, A', and C, there have been no significant modifications to the topography adjacent to these CCR surface impoundments; no operational changes to the Indiana Southern Railroad; and no significant residential, commercial, or industrial developments that have been constructed in the areas downstream of the CCR surface impoundments that would be impacted by a hypothetical dike breach. Therefore, the topography of the ground surfaces adjacent to Ponds A, A', and C and the features downstream of these CCR surface impoundments considered in the 2016 hazard potential classification assessment remain unchanged for this 2021 hazard potential classification assessment.

Ponds A and A' are currently being closed in-place with a common final cover system. Given the significant reduction in the combined operating capacity for Ponds A and A' it was determined that the present conditions of Ponds A and A' still do not pose a threat to human life. However, a failure of the western embankment would deposit CCR material into Lick Creek, which could ultimately spread the CCR material into the White River. This potential environmental damage to areas downstream of Ponds A and A' beyond AES Indiana's property is enough alone to justify classifying both CCR surface impoundments as significant hazard potentials.

Pond C has been closed since May 2021 and, therefore, no longer impounds water. Therefore, the magnitude and extent of material released from a hypothetical failure of Pond C's final cover system would be significantly smaller than that considered in the 2016 hazard potential classification assessment. Given that loss of life was determined to be not probable for the condition of Pond C in 2016, and given the elimination of operating capacity for the pond, the closed Pond C still does not pose a threat to human life. However, a failure at the northern end of Pond C's final cover system would release CCR material into the delineated wetland north of and adjacent to the pond. This potential environmental damage is enough alone to justify classifying Pond C as a significant hazard potential.

Based on the preceding observations and conclusions, the following hazard potential classifications are assigned to the existing CCR surface impoundments at Petersburg in accordance with 40 CFR 257.73(a)(2):

- Pond A: Significant Hazard Potential
- Pond A': Significant Hazard Potential
- Pond C: Significant Hazard Potential

It is noted that the preceding hazard potential classifications for Ponds A, A', and C are unchanged from the classifications assigned to these CCR surface impoundments in the 2016 hazard potential classification assessment.

4.0 CERTIFICATION

I certify that:

- This periodic hazard potential classification assessment was prepared by me or under my direct supervision.
- The work was conducted in accordance with the requirements of 40 CFR 257.73(a)(2).
- I am a registered professional engineer under the laws of the State of Indiana.

Certified By: David E. Nielson

Date: October 5, 2021

Seal:

