

2021 CCR Surface Impoundment Inflow Design Flood Control System Plan

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 two existing coal combustion residual (CCR) surface impoundments, Ponds A and A', and one closed CCR surface impoundment, Pond C. All three of these CCR units are regulated by the U.S. Environmental Protection Agency's (EPA) "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 257.82(c)(1), this report documents the 2021 inflow design flood control system plan for Ponds A, A', and C at Petersburg. Pursuant to 40 CFR 257.82(c)(4), this inflow design flood control system plan was prepared within five years of the previous plan.

2.0 HYDROLOGIC & HYDRAULIC ASSESSMENT

Federal CCR Rule Reference: 40 CFR 257.82(c)(1)

Per the 2021 hazard potential classification assessment completed in accordance with 40 CFR 257.73(a)(2), Ponds A, A', and C are all classified as significant hazard potential CCR surface impoundments. Pursuant to 40 CFR 257.82(a)(3), the inflow design flood event for a significant hazard potential CCR surface impoundment is based on the 1,000-year storm. Accordingly, the 1,000-year storm is used to evaluate the inflow design flood control systems for Ponds A and A'. Conversely, the 25-year, 24-hour storm is used to evaluate the inflow design flood control systems for Pond C since the pond has been closed in-place with a final cover system installed in accordance with the requirements promulgated by 40 CFR 257.102(d). This design storm event is consistent with the inflow design flood specified by 40 CFR 257.81(a) for evaluating the run-on and run-off control systems for CCR landfills. Per the National Oceanic and Atmospheric Administration's Atlas 14, the precipitation values for the 1,000-year, 24-hour and 25-year, 24-hour storm events at the Petersburg site are 10.2 inches and 5.50 inches, respectively.

Because AES Indiana is closing Ponds A and A' and has closed Pond C, AES Indiana no longer uses these three CCR surface impoundments to manage any of Petersburg's wastestreams and indirect stormwater flows. Accordingly, this periodic inflow design flood control system plan evaluates the hydrologic and hydraulic capacities of Ponds A, A', and C by verifying the empty Ponds A and A' and closed Pond C can adequately manage direct precipitation during the design storm event and any corresponding storm water run-on into the ponds.

Pond A discharges water into Pond A' via two, 36-inch-diameter reinforced concrete pipes with an upstream invert elevation of 436.50 feet NAVD88 and a downstream invert elevation of 436.00 feet NAVD88. There is a 45-foot-wide emergency spillway between both ponds that has an elevation of 437.50 feet NAVD88. The

concrete outfall structure in Pond A' has a 36-inch-diameter reinforced concrete pipe that ultimately discharges water into Lick Creek. The upstream and downstream invert elevations for this pipe are 435.50 feet NAVD88 and 435.20 feet NAVD88, respectively. Pond A' also has a 45-foot-wide emergency spillway that has an elevation of 437.00 feet NAVD88. Finally, Pond C's final cover system consists of a mounded grading scheme with approximately 5% slopes that convey non-contact stormwater to various stormwater control features including riprap-lined down drains and shallow swales/troughs.

The inflow design flood control systems for Ponds A and A' were analyzed to evaluate how the inflow design flood would be collected and managed in each pond. The results from this hydrologic and hydraulic assessment are summarized in Table 1. Per these results, water will not be discharged from Pond A or Pond A' during the design storm event because the estimated maximum surface water elevations are below the invert elevations for both ponds' discharge structures. Water will also not overtop the dikes of these CCR surface impoundments during the design storm event since the estimated maximum surface water elevations are below the emergency spillway elevations for Ponds A and A'. Finally, hydrologic and hydraulic calculations prepared for Pond C's final cover system indicate that the closed unit is capable of managing the 25-year, 24-hour storm event. Therefore, the existing Ponds A and A' and the closed Pond C at Petersburg are all able to collect and control the inflow design flood event specified in 40 CFR 257.82(a)(3).

TABLE 1: SUMMARY OF HYDROLOGIC & HYDRAULIC ASSESSMENT FOR PONDS A & A'

CCR Unit	Hazard Potential Classification	Inflow Design Flood	Total Storm Water Inflow	Maximum Surface Water Elevation	Discharge Structure Invert Elevation	CCR Unit Minimum Crest Elevation
			acre-feet	feet NAVD88	feet NAVD88	feet NAVD88
Pond A	Significant	1,000 Year	38.76	428.16	436.50	437.50
Pond A'	Significant	1,000 Year	6.56	422.38	435.50	437.00

3.0 CERTIFICATION

Federal CCR Rule Reference: 40 CFR 257.82(c)(5)

I certify that:

- This periodic inflow design flood control system plan was prepared by me or under my direct supervision.
- The work was conducted in accordance with the requirements of 40 CFR 257.82.
- I am a registered professional engineer under the laws of the State of Indiana.

Certified By: David E. Nielson

Date: October 5, 2021

Seal:

