

MEMORANDUM – Operating Record (40 CFR 257.105(h)(12))

September 23, 2022
File No. 0133274-012

TO: AES Indiana – Petersburg Generating Station

FROM: Haley & Aldrich, Inc.

SUBJECT: Semi-Annual Remedy Selection Progress Report Pursuant to 40 CFR §257.97(a)
Petersburg Generating Station - Ash Pond System and Type I Restricted Waste Landfill

Indianapolis Power & Light Company d/b/a AES Indiana (AESI) initiated corrective measures for the Ash Pond System and Type I Restricted Waste Landfill (Landfill) at the Petersburg Generating Station (PGS) on April 15, 2019, in response to statistically significant levels (SSL) of Appendix IV constituents (lithium and molybdenum) exceeding Groundwater Protection Standards (GWPS). Pursuant to 40 CFR §257.96(a), a demonstration of need for a 60-day extension for the assessment of corrective measures was completed on July 12, 2019. The Corrective Measures Assessment (CMA) Report was completed and placed in the facility operating record on September 13, 2019, and subsequently amended on October 11, 2019.

In accordance with the Federal CCR Rule, following completion of the CMA, AES Indiana must, as soon as feasible, select a remedy that meets the standards listed in 40 CFR §257.97(b). Pursuant to §257.97(a), the owner or operator of a Coal Combustion Residual (CCR) management unit that has completed a CMA for groundwater is required to prepare a semi-annual report describing the progress made in selecting and designing the remedy. This report constitutes the sixth semi-annual remedy selection progress report and is comprised of activities during the period of March 11, 2022, through September 14, 2022. A summary of the progress made in selecting a remedy is provided below.

SUMMARY OF ACTIONS COMPLETED

Ash Pond System and Landfill

The following actions have been completed during this reporting period for the Ash Pond System and the Landfill:

- Completed the statistical analysis of the November 2021 sampling results for the presence of Appendix IV constituents to be present at concentrations above GWPS.
- Continued Assessment Monitoring: Collected groundwater samples and evaluated the results of the May 2022 sampling event to ensure the reliability of the results. Final laboratory results were placed in the facility’s CCR operating record. The groundwater monitoring data for the May 2022 sampling event is being evaluated for statistically significant levels compared to GWPS. Any new parameters that exceed GWPS will be considered in the selection of the final remedy.

- Developed a 3-D model of the Landfill and Ash Pond System to aid in the Geochemical evaluation and further advance the conceptual site model (CSM).
- Updated and calibrated the groundwater flow model by incorporating data from the N&E nested monitoring well locations.
- Assessed the current groundwater monitoring program and developed a plan that will enhance the groundwater monitoring network by:
 - Installing and sampling four (4) additional shallow and (3) additional intermediate monitoring wells around the perimeter of the Ash Pond System;
 - Installing and sampling two (2) additional deep monitoring wells upgradient of the Ash Pond System and Landfill that that will be used to supplement the existing background monitoring wells.

Ash Pond System

The following actions have been completed during this reporting period for the Ash Pond System:

- Developed a revised groundwater Sampling and Analysis Plan for the Ash Pond System.
- Continued implementation of the approved Indiana Department of Environmental Management (IDEM) Ash Pond System Closure Plan / Post Closure Plan¹:
 - Ongoing dewatering activities of Ponds A and Pond A' as allowed under the facilities NPDES permit; and
 - Continued construction activities for Phase 2 and Phase 3 of the final cover system along the west side of Pond A and over Pond A'.

Efforts to determine the nature and extent (N&E) of the Appendix IV SSLs downgradient of the Ash Pond System continued pursuant to § 257.95(g):

- Groundwater samples were collected from the existing N&E monitoring wells during the first semi-annual sampling event in 2022 to provide supplemental groundwater data to:
 - Define the horizontal and vertical extent of Appendix IV constituents along the White River;
 - Supplement and enhance the evaluation of the extent of groundwater impacts and assessment of corrective measures;
 - Inform what additional steps, if any, are necessary to fully delineate N&E of Appendix IV constituents; and
 - Support the selection of remedy.
- Developed a Work Plan for supplemental N&E activities to further establish N&E along the northern and western property boundary to support CMA and selection of remedy.
- Performed environmental permit assessment to identify applicable permits necessary to conduct additional N&E work.
- Completed five (5) exploratory borings and collected groundwater grab samples from three (3) intervals (shallow, intermediate, deep) north of Pond C to provide groundwater screening data to determine proposed monitoring well locations.

¹ The CMA groundwater remedy consists of two parts: source control (unit closure) and groundwater treatment. Installation of the final cover system is the source control element for this unit. that will reduce infiltration of precipitation to groundwater thereby isolating the CCR material.

- Completed installation of six (6) supplemental N&E nested monitoring wells (shallow, intermediate, deep), along the White River to collect groundwater data to further define the horizontal and vertical extent of Appendix IV constituents detected above GWPS.
- Collected groundwater samples in August/September 2022 from the (6) newly installed N&E nested monitoring wells.

Landfill

The following actions have been completed during this reporting period for the Landfill that will better define whether historic mining activities (e.g., underground and surface mining and the placement of mine spoils) and/or naturally occurring geologic units immediately surrounding the Landfill impact background conditions:

- Redeveloped of thirteen (13) monitoring wells around the perimeter of the Landfill;
- Collected groundwater samples from thirteen (13) monitoring wells around the perimeter of the Landfill in April 2022 and from six (6) monitoring well locations in May 2022. Began evaluating geochemical conditions to determine whether naturally occurring sources of lithium and or molybdenum are contributing to GWPS exceedances down-gradient of Landfill;
- Began preparation of an Alternate Source Demonstration (ASD) for arsenic concentrations identified above the GWPS in MW-3 which is located downgradient of the Landfill.

PLANNED ACTIVITIES

Anticipated activities which will support CMA and selection of remedy for the upcoming six months include the following (subject to change):

- Complete the statistical analysis of the May 2022 sampling event to evaluate groundwater for the presence of SSLs above GWPS downgradient of the Ash Pond System and Landfill.
- Continue Assessment Monitoring by collecting groundwater samples in November 2022 from the CCR well network. The groundwater data will be evaluated for statistically significant levels compared to GWPS. Any new constituents that exceed GWPS will be considered in selection of the final remedy.
- Continue efforts to establish N&E along the northern and western property boundary for the Ash Pond System which will support CMA and selection of remedy:
 - Obtain a Letter of Authorization (LOA) from the Indiana Department of Natural Resources (IDNR) for future N&E activities;
 - Install six (6) supplemental N&E nested monitoring wells (shallow, intermediate, deep) and collect groundwater data to define the horizontal and vertical extent of Appendix IV constituents detected above GWPS;
 - Collect and perform laboratory analysis of soil samples at each newly installed monitoring well location to refine geochemical modeling;
 - Complete up to eleven (11) exploratory borings and collect groundwater grab samples from three (3) intervals (shallow, intermediate, deep) within the channel of the White River to collect groundwater data to define the horizontal and vertical extent of Appendix IV constituents;
 - Perform rock coring and in-situ horizontal hydraulic conductivity testing along with laboratory testing to provide vertical permeability of the shale formation that is beneath the Ash Pond System;

- Install pressure transducers in the newly installed nested monitoring wells and select existing N&E nested monitoring well locations to better understand vertical groundwater gradients;
 - Complete hydraulic conductivity testing on new nested monitoring wells to provide data to better understand aquifer characteristics and groundwater flow patterns; and
 - Collect groundwater samples from the nested N&E monitoring wells along the northern and western property boundary/White River to define the vertical and lateral extent of Appendix IV constituents.
- Complete the ASD for arsenic concentrations identified in MW-3 which is located downgradient of the Landfill.
- Pursue potential ASD for arsenic concentrations identified in MW-27B that was installed downgradient of the Ash Pond System during the ongoing N&E investigation.
- Evaluate the groundwater analytical data collected during the May and November 2022 semi-annual assessment monitoring sampling event that will include the N&E monitoring wells.
- As appropriate, refine CSM and associated groundwater flow and solute transport model.
- Continue to perform an engineering review of the five (5) potential CMA alternatives. For these reviews, emphases will be placed on understanding and reacting to impacts of newly gathered analytical results, identifying and researching applicability of emerging technologies and their impacts on the CMA and selection of remedy process.
- Continue permit applicability and risk assessment for CMA options.
- Continue closure activities at Pond A and A' (dewatering activities and Phase 2 and Phase 3 final cover system installation) in accordance with the IDEM-approved and federal CCR Ash Pond System Closure Plan / Post Closure Plan.
- Estimate quantity of Appendix IV material released as required under 40 CFR §257.95(g)(1)(ii) and place in the facility's CCR operating record.
- Provide a semi-annual progress report that summarizes AESI's progress and status regarding a selection of remedy.