

Charles R. Lowman Power Plant

Coal Combustion Residuals (CCR) Surface Impoundment Remedy

Selection and Design: Semi-Annual Progress Report December 2022

1. Introduction

Regulations codified in 40 C.F.R. § 257.97(a) and Alabama Department of Environmental Management (ADEM) Admin. Code r. 335-13-15-.06(8)(a) require the selection of a remedy and the preparation of “a semiannual report describing the progress in selecting and designing the remedy” until a remedy is selected. PowerSouth Energy Cooperative submitted an Assessment of Corrective Measures (ACM), on July 11, 2019, for the Charles R. Lowman Power Plant. The ACM identified and evaluated monitored natural attenuation (MNA), a permeable treatment barrier, and groundwater recovery and treatment as potential remedies. The ACM recommended MNA as the primary remedy. In response to comments provided by ADEM, a Revised ACM was prepared and submitted on May 5, 2020. The Revised ACM provided additional information, including the anticipated effects of source control. The Revised ACM discussed potential corrective measures and again recommended MNA as the primary remedy. Both versions of the ACM are available on the CCR compliance website for the Lowman Power Plant. To fulfill the requirements of 40 CFR §257.96(e) and ADEM Admin Code r. 335-13-15-.06(7)(e), PowerSouth hosted a public meeting at the Jackson Community Center in Jackson, Alabama on June 29, 2020, to present the proposed remedy to the community and solicit public comment.

2. Summary of Work Completed During Reporting Period

During the current semi-annual period (July through December 2022) the following activities were completed:

- Analytical results from the April and May 2022 semi-annual groundwater sampling were received, reviewed, and included in the 2022 Semi-Annual GWMR in July 2022.
- Additional GW analytical results for MNA parameters from the April and May 2022 sampling event were reviewed and evaluations initiated.
- MNA-focused analytical and physical testing results from subsurface soil samples were received, reviewed, tabulated, and initial evaluations conducted and ongoing. These soil samples were collected in June 2022 from 11 boring locations.

- Groundwater geochemical maps (DO, ORP, pH, and alkalinity) were updated with data collected in April 2022, and initial evaluations conducted and ongoing.
- Charts comparing groundwater COCs and geochemical parameters versus time were prepared for key monitoring wells along multiple trendlines. Evaluations were initiated and are ongoing to determine if correlations exist between the COCs and geochemical parameters.
- PowerSouth continued operating a dewatering treatment system for removal and treatment of interstitial water from the interconnected, multiunit CCR pond system in support of closure of the CCR pond system. The dewatering treatment system has been operating since September 2021.
- PowerSouth awaited comments from ADEM on the MW-3 Area Hydraulic Control System Remedial Design Workplan that was submitted to ADEM on January 7, 2022.

3. Preliminary Monitored Natural Attenuation Data

As noted above, additional groundwater data and soil data pertaining to the MNA evaluation were generated during the reporting period and evaluation of these data with respect to the viability of an MNA remedy were initiated and are on-going. The following summarizes the types of data currently under evaluation. PowerSouth anticipates submitting a comprehensive analysis of the MNA data in a future report.

Groundwater

Eighteen monitoring wells at the site were sampled between April and May 2022. Standard field geochemical parameters (e.g. pH, dissolved oxygen) were recorded during purging and groundwater samples were submitted for analysis of the following analytes:

- Total and dissolved metals (As, Be, Ca, Co, Fe, K, Mg, Mo, Na)
- Anions (Br⁻, Cl⁻, F⁻, S⁻, NO₃⁻, NO₂⁻, PO₄³⁻, SO₄²⁻)
- Cations (Na⁺, K⁺, Ca²⁺, Mg²⁺, Fe²⁺/ Fe³⁺)
- Total organic carbon (TOC) and dissolved organic carbon (DOC)
- Alkalinity (total, carbonate, & bicarbonate)

Data collected during the April and May 2022 groundwater sampling event are currently under evaluation.

Soil

In June 2022, soil samples were collected from 11 soil borings (SB-49 thru SB-59) from across the site at locations generally downgradient (towards the river) from the former Unit 2/3 CCR pond undergoing closure. Each boring had three soil samples collected from pre-determined sampling intervals.

Soil samples were analyzed and tested for the following chemical and physical parameters:

- Total metals (primary COCs: As, Be, Co, Li, Mo, which have been identified based on historical exceedance of their respective GWPS)
- Leachability of primary COCs by synthetic precipitate leaching procedure (SPLP)
- Sequential extraction procedure (SEP)
- TOC
- Cation/anion exchange capacity
- Soil classification parameters (soil type [USCS], grain size, bulk/dry density, soil pH, porosity, hydraulic conductivity)

Data collected during the June 2022 soil sampling activities are currently under evaluation and will be incorporated with data collected during subsequent sampling activities

A comprehensive evaluation and discussion of the collected soil and groundwater data will be included in the Adaptive Management Corrective Action Plan to be prepared and submitted in accordance with the schedule contained in the PowerSouth Energy Cooperative Charles R. Lowman Power Plant Corrective Action Plan submitted to the Department on February 10, 2021.