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TECHNICAL MEMORANDUM

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File No. 129342-043

TO: Associated Electric Cooperative, Inc
Jenny Jones – Manager, Land and Water Resources

FROM: Haley & Aldrich, Inc.
Steven F. Putrich, P.E., Senior Associate – Principal Consultant
Jason Pokorny – Program Manager

SUBJECT: Semi-Annual Remedy Selection Progress Report Pursuant to 40 CFR § 257.97(a)
Fall 2022
New Madrid Power Plant – Pond 003
New Madrid, Missouri

Associated Electric Cooperative, Inc. (AECI) has implemented the U.S. Environmental Protection Agency (USEPA) Federal Coal Combustion Residuals (CCR) Rule (Code of Federal Regulations Title 40 [40 CFR] §§ 257 and 261) effective 19 October 2015, along with subsequent revisions, for the active CCR surface impoundment referred to as Pond 003 at the New Madrid Power Plant (NMPP) located in New Madrid, Missouri. Section 257.97(a) of the CCR Rule requires the owner or operator of a CCR management unit that has completed a Corrective Measures Assessment (CMA) for groundwater to prepare a semi-annual report describing the progress in selecting and designing the remedy. This report provides the Fall 2022 semi-annual remedy selection progress report and is comprised of activities conducted during the period of April 2022 through September 2022.

The CMA was initiated for Pond 003 on 15 May 2019 in response to a statistically significant level (SSL) of an Appendix IV constituent (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 12 July 2019. The CMA report was completed and placed in the facility operating record on 13 September 2019, and subsequently amended on 11 October 2019, and posted to AECI's CCR public website. Based on the results of the CMA, AECI must, as soon as feasible in accordance with the CCR Rule, select a remedy that meets the standards listed in 40 CFR § 257.97(b). A summary of the progress between April 2022 through September 2022 in selecting a remedy in compliance with the CCR Rule is provided below which demonstrates AECI's active pursuit of selection of remedy for Pond 003.

SUMMARY OF ACTIONS COMPLETED

The following actions have been completed during this reporting period (April 2022 through September 2022):

- AECI successfully completed operational start-up of the coal pile runoff infrastructure discharge treatment system, and a full-production demonstration is ongoing. Once the demonstration has been completed, the coal pile runoff (which was historically a non-CCR waste stream managed through Pond 003) will be rerouted in anticipation of the closure of Pond 003.
- Continued Assessment Monitoring: Evaluated the results of the February 2022 (semi-annual) compliance wells sampling event in accordance with § 257.95(g). The February 2022 groundwater monitoring compliance wells were sampled and evaluated for SSLs compared to GWPS. No new constituent parameters or compliance wells were determined to exceed GWPS; therefore, no additional information was needed to be included in the remedy selection process.
- Groundwater sampling of the 15 nature and extent (N&E) monitoring wells in February 2022 for Appendix IV molybdenum pursuant to § 257.95(g). Supplemental geochemical parameters were analyzed to supplement the remedy modeling and analysis. The analytical results are being used to supplement and enhance the evaluation of the extent of groundwater impacts, assessment of corrective measures, and selection of remedy. An additional round of seasonal N&E sampling was completed in August 2022.
- Defined N&E of the molybdenum beneath Pond 003. Active N&E monitoring and program implementation since 2020, including groundwater quality sampling and groundwater elevation measurements during a variety of seasonal and operational conditions, have been used to delineate the extent of the plume.
- Further refinement of the site conceptual model and associated groundwater modeling with geochemical analyses continued based on N&E results from February 2022.
- Continued evaluations of source control with monitored natural attenuation (MNA) as the preferred remedy selection, along with considerations of the other groundwater remedy options listed in the CMA.
- Evaluation of upgradient sources to determine potential impacts (not related to Pond 003) to the selection of a remedy and to the N&E of molybdenum in the subsurface
- The initial evaluations of MNA as a groundwater treatment (in addition to source control). Haley & Aldrich, Inc. continues to consider all lines of evidence that provide support to geochemical processes associated with precipitation and attenuation of SSLs and has evaluated updates to the CMA groundwater model in the ongoing enhanced evaluation of MNA and other groundwater remedies considered in the CMA.

PLANNED ACTIVITIES

Anticipated activities for the upcoming semi-annual corrective measures selection progress period (October 2022 through March 2023) include the following (subject to change):

- Continue engineering, design, permitting, construction, start-up, and operation of CCR and non-CCR flow reductions to Pond 003.
- Continue Assessment Monitoring: Collect groundwater samples in February 2023 from the CCR well network and N&E wells. The groundwater data will be evaluated for SSLs compared to GWPS. Any new constituent that exceeds GWPS will be considered in selection of the final remedy.
- As appropriate, refine the conceptual site model and associated groundwater modeling in support of the Selection of Remedy process.
- Continue to evaluate the effectiveness of MNA as a selection of remedy, specifically focusing on the USEPA MNA technical guidance (USEPA, 2015¹) and other related industry publications.
- Continue to perform an engineering review in anticipation of the selection of remedy with an emphasis 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.
- Progress toward selecting a remedy that meets the standards of § 257.97(b), including the development of a final report which will contain a schedule for implementing and completing remedial activities as required by § 257.97(d).
- Provide a semi-annual progress report that summarizes AECI's progress and status regarding a selection or implementation of the remedy, as required by § 257.105(h)(14).

¹ USEPA, 2015. *Use of Monitored Natural Attenuation for Inorganic Contaminates in Groundwater at Superfund Sites*. Office of Solid Waste and Emergency Response. August.