

June 22, 2020

SUBJECT: Groundwater Remedy Selection Semiannual Progress Report  
Pond 5, Pond 7/7A, Pond 10, and Landfill 11  
Former Stuart Electric Generating Station  
Kingfisher Development, LLC  
Manchester, Adams County, Ohio

## **INTRODUCTION**

This report documents progress made toward selecting a groundwater remedy for the Pond 5, Pond 7/7A, Pond 10, and Landfill 11 Coal Combustion Residual (CCR) units at the former Stuart Electric Generating Station (Site). Groundwater monitoring and corrective action requirements are conducted at the Site in accordance with the U.S. Environmental Protection Agency's (USEPA) rule entitled *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities* (CCR Rule). The Site is a former coal-burning electricity generating facility located along the Ohio River near Manchester, Ohio. This progress report fulfills the semiannual reporting requirement listed in §257.97 (a) of the CCR Rule.

Corrective Measures Assessment (CMA) reports were initially completed in September 2019 and were amended in October 2019. Identification and evaluation of various remedial alternatives was completed as part of the CMA. Since completion of the CMA reports, Kingfisher Development LLC (KD) acquired the Site and assets (including environmental responsibilities) from AES Ohio Generation, LLC (AES). All groundwater monitoring and CMA activities completed through 2019 were completed by AES and their consultants. Considering that the Site is under new ownership, the previously prepared CMA reports are being evaluated to determine the compatibility of the previously developed remedial alternatives with potential future Site use. This progress report summarizes investigations and reports that were completed by AES. KD is evaluating these investigations and reports to determine if any modifications are appropriate at this time before moving forward with selecting and implementing a remedy. Any potential modifications to the existing program and CMA remedial alternatives will be completed in accordance with the CCR Rule requirements.

## **GROUNDWATER MONITORING AND CORRECTIVE MEASURES ASSESSMENT SUMMARY**

AES implemented a groundwater monitoring program compliant with the April 17, 2015 CCR Rule published by the USEPA. Pond 5, Pond 7/7A, Pond 10, and Landfill 11 detection monitoring completed in 2017 indicated statistically significant increases (SSI) for some Appendix III constituents. Pond 5, Pond 7/7A, Pond 10, and Landfill 11 assessment monitoring completed in 2018 indicated statistically significant levels (SSL) of Appendix IV constituents in groundwater. Appendix IV constituents that were detected in samples at a SSL included barium, cobalt, and radium within the Pond 5 monitoring network; cobalt and molybdenum within the Pond 7/7A monitoring network; molybdenum within the Pond 10 monitoring

network; and lithium, molybdenum, and selenium within the Landfill 11 monitoring network. Arsenic was detected in samples at a SSL within the Pond 7/7A monitoring network, however, an alternative source demonstration was made and arsenic was determined to be naturally occurring in the soil. CMAs were completed for each of the CCR units for which an Appendix IV constituent SSL was determined.

A detailed environmental evaluation of Pond 5, Pond 7/7A, Pond 10, Landfill 11, and surrounding areas was completed as part of the CMA. The CMA included a risk evaluation to identify whether current groundwater conditions pose an unacceptable risk to human health and the environment, and whether corrective measures will mitigate such an unacceptable risk, if present. The risk evaluation concluded that there are no adverse effects on human health or the environment currently or under reasonably anticipated future uses from either surface water or groundwater due to CCR management practices at Pond 5, Pond 7/7A, Pond 10, and Landfill 11.

In performing the CMA, the following conditions were considered: presence and distribution of constituents, the size and configuration of the CCR units, hydrogeologic setting, and the results of the risk evaluation. The alluvial aquifer beneath the CCR units ranges from approximately 30 feet (ft) to 120 ft in thickness. Flow within the alluvial aquifer is directly controlled by recharge from the north and discharge to the south and west to the Ohio River and Little Three Mile Discharge Canal, respectively.

## REMEDIAL ALTERNATIVES

Alternatives were developed by AES and reported in the CMA reports for each unit as follows:

- Pond 5
  - Alternative 1: Closure in place (CIP) with low permeability capping and monitored natural attenuation (MNA);
  - Alternative 2: CIP with in-situ stabilization (ISS), low permeability capping and MNA;
  - Alternative 3: CIP with low permeability capping and in-situ groundwater treatment;
  - Alternative 4: CIP with low permeability capping, hydraulic containment (HC) through groundwater pumping, and ex-situ groundwater treatment;
  - Alternative 5: CIP with low permeability capping, HC through groundwater pumping, and ex-situ groundwater treatment and barrier wall; and
  - Alternative 6: Closure by removal (CBR) with MNA.
- Pond 7/7A
  - Alternative 1: CIP with low permeability capping and HC through groundwater pumping and ex-situ treatment;
  - Alternative 2: CIP with low permeability capping, HC through groundwater pumping, ex-situ groundwater treatment and barrier wall; and
  - Alternative 3: CBR with MNA.
- Pond 10
  - Alternative 1: CIP with low permeability capping and MNA;
  - Alternative 2: CIP with low permeability capping, HC through groundwater pumping, and ex-situ groundwater treatment;
  - Alternative 3: CIP with low permeability capping, HC through groundwater pumping, and ex-situ groundwater treatment and barrier wall; and
  - Alternative 4: CBR with MNA.

- Landfill 11
  - Alternative 1: CIP with MNA;
  - Alternative 2: In-situ groundwater treatment;
  - Alternative 3: HC through groundwater pumping and ex-situ groundwater treatment; and
  - Alternative 4: HC through groundwater pumping and ex-situ groundwater treatment and barrier wall.

These alternatives were evaluated based on the threshold criteria provided in the CCR rule [§257.97 (b)] and then compared to three of the four balancing criteria stated in the CCR Rule [§257.97 (c)].

These criteria consist of the following:

§257.97 Selection of remedy

(b) Remedies must [Threshold Criteria]:

- (1) Be protective of human health and the environment;
- (2) Attain the groundwater protection standard as specified pursuant to §257.95(h);
- (3) Control the source(s) of releases so as to reduce or eliminate, to the maximum extent feasible, further releases of constituents in Appendix IV to this part into the environment;
- (4) Remove from the environment as much of the contaminated material that was released from the CCR unit as is feasible, taking into account factors such as avoiding inappropriate disturbance of sensitive ecosystems;
- (5) Comply with standards for management of wastes as specified in §257.98(d).

(c) In selecting a remedy that meets the standards of paragraph (b) of this section, the owner or operator of the CCR unit shall consider the following evaluation factors [Balancing Criteria]:

- (1) The long- and short-term effectiveness and protectiveness of the potential remedy(s), along with the degree of certainty that the remedy will prove successful;
- (2) The effectiveness of the remedy in controlling the source to reduce further releases;
- (3) The ease or difficulty of implementing a potential remedy(s); and
- (4) The degree to which community concerns are addressed by a potential remedy(s).

The threshold criteria must be met in order for a remedial alternative to be selected. All of the remedial alternatives proposed meet the threshold criteria. A risk assessment and exposure evaluation was completed as part of the CMA and it was concluded that there is no complete drinking water exposure pathway. The completed evaluation demonstrates that there is no impact on drinking water and there is no evidence of impact to human health or the environment. There are no downgradient users of groundwater as drinking water – thus, there is no impact on drinking water. There is no exposure to CCR-derived constituents detected in groundwater at the Site – either via groundwater use or surface water. Even for the very few results that may be above GWPS for some of the groundwater sampling events, there is no complete drinking water exposure pathway and thus there is no risk.

Each remedial alternative was evaluated with respect to balancing criteria during the CMA. A favorability rating was assigned to each remedial alternative for each balancing criteria. However, balancing criteria number 4, which considers the degree to which community concerns are addressed, will be evaluated.

## **PREFERRED ALTERNATIVES**

The following are a list of preferred alternatives with respect to evaluations completed thus far:

- Pond 5 - Alternative 6: CBR with MNA
- Pond 7/7A - Alternative 3: CBR with MNA
- Pond 10 - Alternative 4: CBR with MNA
- Landfill 11 - Alternative 1: CIP with MNA

The recommended CCR unit closure plans for the Site consist of pond closure via CBR (i.e. clean closure) and landfill closure via CIP. The CCR unit closure plans paired with MNA are the most favorable groundwater remedial alternative at this time.

In accordance with §257.97, a final report describing the selected remedy and how it meets the applicable standards will be completed after a remedy is selected. In accordance with §257.98, a corrective action groundwater monitoring program will be established and implemented after a remedial alternative is selected. Corrective measures are considered complete when monitoring reflects that the SSL constituent concentrations in groundwater downgradient of the CCR unit do not exceed the Appendix IV GWPS for three consecutive years.

## **FUTURE ACTIVITIES**

1. This progress report summarizes investigations and reports that were completed by AES. KD is evaluating these investigations and reports to determine if any modifications are appropriate at this time before moving forward with selecting and implementing a remedy.
2. Select a remedy as soon as feasible and prepare a final report describing the selected remedy and how it meets the standards specified in §257.97.
3. Within 90 days of selecting a remedy, the owner or operator must initiate remedial activities. A corrective action groundwater monitoring program must be established and implemented.