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August 28, 2023

Mr. Ryan Bennett, Environmental Analyst  
Associated Electric Cooperative, Inc.  
2814 S. Golden, P.O. Box 754  
Springfield, MO 65801-0754

RE: Pond 001, Cell 3 Professional Engineering Annual Inspection of CCR Impoundment  
AECI PO No. TH-110590

Dear Ms. White:

GREDELL Engineering Resources, Inc. (GER) conducted the annual inspection by a qualified professional engineer of Pond 001, Cell 3 at Associated Electric Cooperative's (AECI) Thomas Hill Energy Center (THEC), as required by 40 CFR 257.83 (b) to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted engineering standards. Wayne Elliott, E.I., GER, under the supervision of Bruce Dawson, P.E., GER, conducted an on-site inspection of Pond 001, Cell 3 (Cell 3) on August 16, 2023. The following is the inspection report required by 40 CFR 257.83 (b) (2).

#### REVIEW OF AVAILABLE INFORMATION

Per 40 CFR 257.83 (b) (1), this inspection included:

- (i) *A review of available information regarding the status and condition of the CCR unit, including, but not limited to, files available in the operating record (e.g., CCR unit design and construction information required by §§ 257.73(c)(1) and 257.74(c)(1), previous periodic structural stability assessments required under §§ 257.73(d) and 257.74(d), the results of inspections by a qualified person, and results of previous annual inspections).*

GER reviewed the following documents as part of this inspection:

- Weekly inspection reports for 2022 and 2023 provided by AECI THEC,
- "Report on Periodic Structural Stability Assessment, Pond 001 – Cell 003, Thomas Hill Energy Center, Clifton Hill, Missouri" by Haley & Aldrich, Inc., Cleveland, Ohio, dated 15 October 2021, reference File No. 128064-022,
- "Pond 001, Cell 3 Professional Engineering Annual Inspection of CCR Impoundment", dated August 28, 2020 by GER, and
- "Cell 3 - 2013 Ash Pond 001 CCP Removal Project" construction documents dated May 2013 by GER.

#### ON-SITE OBSERVATIONS

Per 40 CFR 257.83 (b) (1), this inspection included:

- (ii) A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit and appurtenant structures;*

There were no visible signs of distress or malfunction of Pond 001 Cell 3 or its appurtenant structures at the time of this inspection.

- (iii) A visual inspection of any hydraulic structures underlying the base of the CCR unit or passing through the dike of the CCR unit for structural integrity and continued safe and reliable operation.*

The reinforced concrete principal spillway inlet structure of Cell 3 appeared to be intact, stable, and properly aligned. The structure displayed no signs of concrete spalling or cracking that would impair structural integrity, there was no visible exposed reinforcing steel, and the structure appeared to be in functional vertical and horizontal alignment. The discharge end of the 48" principal spillway pipe was partially submerged in Cell 4. Direct observation of the principal spillway discharge pipe will require remote controlled inline camera inspection or confined space entry protocols and was not attempted during this inspection. The emergency spillway crosses the berm and top-of-berm roadway just west of the principal spillway, is armored with 8 to 12-inch rip rap on the upstream and downstream slopes and approximately 1-inch clean crushed limestone across the embankment crest, and was observed to be in good condition.

Per 40 CFR 257.83 (b) (2), the following observations are noted:

- (i) Any changes in geometry of the impounding structure since the previous annual inspection.*

The Cell 3 embankment crest and slopes were of uniform line and grade. There was no discernible sag, slumping, bulging or other geometric indications of adverse embankment or embankment foundation performance. The access road and emergency spillway were well maintained.

Rapid drawdown induced scarps were noted at the past long term water elevation along the north side of the downstream embankment of Cell 3. Their size and frequency were not sufficient to create a concern for embankment stability or operation of the structure. These should be monitored regularly to determine when maintenance is appropriate.

- (ii) The location and type of existing instrumentation and the maximum recorded readings of each instrument since the previous annual inspection.*

There is no instrumentation of Cell 3.

- (iii) The approximate minimum, maximum, and present depth and elevation of the impounded water and CCR since the previous annual inspection.*

GER is not aware of any minimum and maximum water level and CCR records for Cell 3. The water level in Cell 3 was approximately elevation 707.2 feet, relative to an elevation of 719.40 feet at the top of Cell 3's principal spillway riser structure, as surveyed by Mark Robertson, PLS in February 2013. The top elevation of exposed CCR in the cell ranged from approximately 710 to 712 feet.

**(iv)** *The storage capacity of the impounding structure at the time of the inspection.*

The estimated storage volume between the observed water surface elevation (707.2 feet) and emergency spillway elevation (717 feet) is approximately 110 acre-feet.

**(v)** *The approximate volume of the impounded water and CCR at the time of the inspection.*

Open water was visible in the approximate center of the southerly half of the cell, with a small additional area of open water in the northeast corner of the cell. The total area of open water is estimated to be approximately 2 acres. Based on our evaluation of available topographic information, the estimated volume of impounded water and CCR at the time of this inspection is approximately 90 acre-feet.

**(vi)** *Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit and appurtenant structures.*

There were no appearances of actual or potential structural weakness of the Cell 3 structures. There were no observed existing conditions disrupting or having the potential to disrupt the operation and safety of Cell 3 and its appurtenant structures.

**(vii)** *Any other change(s) which may have affected the stability or operation of the impounding structure since the previous annual inspection.*

At the time of this inspection, there were no discernible changes which have affected the stability or operation of the Cell 3 embankments.

Per 40 CFR 257.83 (b) (5):

*If a deficiency or release is identified during an inspection, the owner or operator must remedy the deficiency or release as soon as feasible and prepare documentation detailing the corrective measures taken.*

No visual evidence of a deficiency or release was identified during this inspection.

**GENERAL COMMENTS and RECOMMENDATIONS**

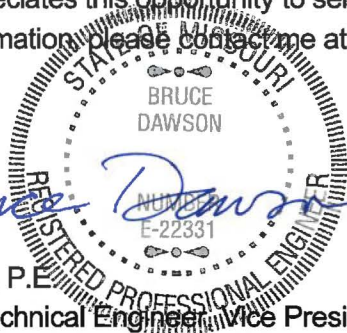
Small rapid drawdown induced scarps should be monitored regularly to determine when maintenance is appropriate.

This concludes the 2023 annual inspection by a qualified professional engineer of Pond 001, Cell 3 at Associated Electric Cooperative's Thomas Hill Energy Center, as required by 40 CFR 257.83 (b). GER appreciates this opportunity to serve AECI THEC. If you have any questions or require additional information, please contact me at (573) 659-9078.

Sincerely,



8/28/23



Bruce Dawson, P.E.  
Principal Geotechnical Engineer, Vice President

- C: Thomas R. Gredell, P.E., President
- Mikel C. Carlson, R.G., Principal Geologist, Vice President
- Jerret Fisher, Safety & Environmental Specialist, AECI - THEC