

MEMORANDUM

7 March 2023
File No. 128064-031

SUBJECT: Written Closure Plan – Update – Q1 2023
Associated Electric Cooperative, Inc.
Thomas Hill Energy Center – Cell 004
Clifton Hill, MO

Associated Electric Cooperative, Inc. (AECI) owns and operates the existing coal combustion residuals (CCR) surface impoundment referred to as Cell 004 (Unit) at the Thomas Hill Energy Center (THEC) located in Clifton Hill, Missouri. This CCR surface impoundment was previously active but ceased receiving CCR and non-CCR waste streams generated by THEC on 29 December 2022. This Written Closure Plan (Plan) addresses the requirements of 40 C.F.R. §257.102 *Criteria for conducting the closure or retrofit of CCR units*, specifically section 40 C.F.R. §257.102(b) for written closure plans, of the US Environmental Protection Agency's (EPA's) Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities, 40 C.F.R. Part 257 (CCR Rule) effective 19 October 2015, including subsequent revisions to the CCR Rule. The information required for the Plan for Cell 003 is presented in the following sections in accordance with 40 C.F.R. §257.102(b) of the CCR Rule. This Plan has been updated to reflect the selected closure method and associated project schedule, as well as to incorporate revised regulatory certification language per CCR Rule revisions.

Background

Cell 004 was historically operated as part of the "Ash Pond 1" multi-unit wastewater treatment system at THEC, which was comprised of existing CCR surface impoundments Cell 001, Cell 003, and Cell 004. Each surface impoundment in the series was identified separately under the CCR regulations along with a single multi-unit groundwater monitoring system. Cell 001 previously – and separately – initiated closure by removal of CCR following its known final receipt of CCR and non-CCR waste streams on 2 September 2021. Cell 003 and Cell 004 were operated collectively and are considered a single CCR unit under the same time frames for the purposes of closure¹.

This Plan has been developed based upon information provided by AECI and describes the Unit, closure elements, a general schedule for closure, and steps required to amend the Plan in the future if necessary. AECI has decided that the impoundment will be closed by removal of CCR in accordance with the allowable closure methods in the CCR Rule, specifically 40 C.F.R. §257.102(c).

¹ See EPA's response to Question 1 of the Frequent Questions about Closure and Post-closure Care and Implementing the Final Rule Regulating the Disposal of Coal Combustion Residuals (CCR) on the EPA's website (last updated 1 September 2022); and on page 12 of the PDF format (updated on 23 July 2021).
(<https://www.epa.gov/coalash/frequent-questions-about-closure-and-post-closure-care-and-implementing-final-rule>)

CCR Rule Closure Plan Requirements

40 C.F.R. §257.102(b)(1): The owner or operator of a CCR unit must prepare a written closure plan that describes the steps necessary to close the CCR unit at any point during the active life of the CCR unit consistent with recognized and generally accepted good engineering practices. The written closure plan must include, at a minimum, the information specified in paragraphs (b)(1)(i) through (vi) of this section.

At any point during the active life of the Unit, closure may be necessary. Regardless of when the impoundment is closed the following steps will be necessary for closure of the Unit identified for both closure methods:

1. Cease placing CCR or other wastes in the impoundment (i.e., from locations external to the multi-unit system).
2. Commence closure no later than 30-days after known final receipt of CCR or removal of the known final volume of CCR from the CCR unit for the purpose of beneficial use.
3. No later than the date closure is initiated, prepare a notification of intent to initiate closure of a CCR unit and place notification in the facility operating record.
4. Finalize detailed engineering construction plans for closure.
5. Obtain regulatory permits, as determined necessary at that time.
6. Complete removal of CCR within five (5) years of commencing closure activities unless allowable extensions are determined appropriate and are certified.
7. Obtain Professional Engineer (PE) certification verifying closure has been completed in accordance with this Closure Plan.
8. Within 30-days of completion of closure of the CCR unit, prepare a notification of closure and place notification in the facility operating record. The notification of closure must include the PE certification from Step 7.

40 C.F.R. §257.102(b)(1)(i): A narrative description of how the CCR unit will be closed in accordance with this section.

After ceasing receipt of CCR and non-CCR waste streams to the Unit, and any necessary unwatering and dewatering is completed, the CCR materials will be removed from the Unit and areas that have been affected by releases from the CCR unit will be decontaminated. Once CCR materials have been removed, some portion of the underlying subgrade soils may also be removed as determined necessary to complete the removal. In addition, groundwater monitoring concentrations will be evaluated to determine when the groundwater protection standards (GWPS) are achieved². Once the CCR Rule requirements are met, the Unit will be deemed closed and necessary certifications and notifications will be completed within applicable deadlines. Following completion of closure removal activities, the footprint of the impoundment(s) may be repurposed for other use.

² GWPS are established in accordance with 40 C.F.R. §257.95(h)) for constituents listed in appendix IV of the CCR Rule.

40 C.F.R. §257.102(b)(1)(ii): If closure of the unit will be accomplished through removal of CCR from the CCR unit, a description of the procedures to remove the CCR and decontaminate the CCR unit in accordance with paragraph (c) of this section.

40 C.F.R. §257.102(c): An owner or operator may elect to close a CCR unit by removing and decontaminating all areas affected by releases from the CCR unit. CCR removal and decontamination of the CCR unit are complete when constituent concentrations throughout the CCR unit and any areas affected by releases from the CCR unit have been removed and the groundwater monitoring concentrations do not exceed the groundwater protection standard established pursuant to §257.95(h) for constituents listed in appendix IV to this part.

Removal of CCR materials will be completed by excavation and use of the CCR either as beneficial use or disposal in a landfill. Once AECl completes removal of CCR materials and decontamination of all areas affected by releases from the Unit, groundwater concentrations will be evaluated by comparing to the determined GWPS and either the Unit will meet those standards and be certified as closed or, in the event that any appendix IV constituent is detected at a statistically significant level above the GWPS, the groundwater program will be managed in accordance with the requirements of the CCR Rule to meet the protection standards.

40 C.F.R. §257.102(b)(1)(iii): If closure of the unit will be accomplished by leaving CCR in place, a description of the final cover system, designed in accordance with paragraph (d) of this section, and the methods and procedures to be used to install the final cover. The closure plan must also discuss how the final cover system will achieve the performance standards specified in paragraph (d) of this section.

The Unit is planned to be closed by removal; however, AECl reserves the right to amend this Plan to account for design changes if any or all CCR requires closure-in-place.

40 C.F.R. §257.102(b)(1)(iv): An estimate of the maximum inventory ever on-site over the active life of the CCR unit.

The maximum volume of CCR ever to be stored in the Unit over its active life – if the impoundment were filled to its design total capacity – is estimated to be 160 acre-feet in Cell 003 and 125 acre-feet in Cell 004. Bathymetric surveys of the CCR units completed in the fall of 2022 indicate actual on-site inventory of CCR material is approximately 140 acre-feet in Cell 003 and 50 acre-feet in Cell 004.

40 C.F.R. §257.102(b)(1)(v): Estimate of the largest area of the CCR unit ever requiring a final cover as required by paragraph (d) of this section at any time during the CCR unit's active life.

The Unit is planned to be closed by removal; however, AECl reserves the right to amend this Plan to account for design changes if any or all CCR requires closure-in-place.

40 C.F.R. §257.102(b)(1)(vi): A schedule for completing all activities necessary to satisfy the closure criteria in this section, including an estimate of the year in which all closure activities for the CCR unit will be completed. The schedule should provide sufficient information to describe the sequential steps that will be taken to close the CCR unit, including identification of major milestones such as coordinating with and obtaining necessary approvals and permits from other agencies, the dewatering and stabilization phases of CCR surface impoundment closure, or installation of the final cover system, and the estimated timeframes to complete each step or phase of CCR unit closure. When preparing the written closure plan, if the owner or operator of a CCR unit estimates that the time required to complete closure will exceed the timeframes specified in paragraph (f)(1) of this section, the written closure plan must include the site-specific information, factors and considerations that would support any time extension sought under paragraph (f)(2) of this section.

An estimated schedule for completing the activities necessary to satisfy the closure by removal criteria of the CCR Rule is provided below. AECI has initiated closure of the Unit in Q1 2023 and anticipates that CCR removal will be complete by the end of 2026, though AECI reserves the right to utilize the maximum allowable time outlined in §257.102(f)(1)(ii) (i.e., Q1 2028) and to seek a time extension per §257.102(f)(2), as needed. The exact timeframe associated with the groundwater monitoring requirements for closure by removal is unclear at this time and will be determined following the removal of CCR materials.

Closure by Removal Schedule							
Step	Task Item	Completion Timeframe (years)					
		◆	1	2	3	4	5
1	Cease Receipt of Wastestreams	■					
2	Commence Closure		■				
3	Notice of Intent to Initiate Closure of the CCR Unit		■				
4	Field Investigations in Support of Closure		■				
5	Prepare Construction Plans		■				
6	Obtain Regulatory Permits		■				
7	CCR Removal with Water Management		■	■	■	■	■
8	Groundwater Monitoring for Decontamination Verification				■	■	■
9	PE Closure Certification					■	■
10	Notification of Closure Completion					■	■

The schedule as shown above is based on a compliant operation and closure. Impacts from regulatory requirements, weather, contractor availability, and other potential parties may alter this schedule as currently planned.

Per 40 C.F.R. §257.102(e)(3), closure of the impoundment has commenced when AECl has ceased placing CCR in the impoundment and completes any of the following actions or activities: (i) Taken any steps necessary to implement the written closure plan; (ii) Submitted a completed application for any required state or agency permit or permit modification; (iii) Taken any steps necessary to comply with state or other agency standards that are a prerequisite, or are otherwise applicable, to initiating or completing the closure of the CCR unit.

Closure activities for the CCR impoundment will occur in accordance with the allowable timeframes when either the impoundment ceases receiving CCRs, reaches capacity, or is triggered for closure. AECl will complete closure in the allowable timeframes including any closure time extensions in accordance with 40 C.F.R. §257.102(f).

40 C.F.R. §257.102(b)(3)(i): The owner or operator may amend the initial or any subsequent written closure plan developed pursuant to paragraph (b)(1) of this section at any time.


AECl will assess and amend the Plan when there is a change in operation of the CCR impoundment that would substantially affect the closure plan or when unanticipated events necessitate a revision of the Plan either before or after closure activities have commenced.

The Plan will be amended at least 60 days prior to a planned change in the operation of the facility or the CCR impoundment, or no later than 60 days after an unanticipated event requires the need to revise the Plan. If the Plan needs to be revised after closure activities have commenced, it will be revised no later than 30 days following the triggering event.

The amended Plan will be placed in the facility operating record as required by the CCR Rule.

40 C.F.R. §257.102(b)(4): The owner or operator of the CCR unit must obtain a written certification from a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority that the initial and any amendment of the written closure plan meets the requirements of this section.

I certify that this amended written Closure Plan for AECI's closure of Cell 004 at the Thomas Hill Energy Center meets the requirements of 40 C.F.R. §257.102(b).

Signed: 
Certifying Engineer

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Professional Engineer's Seal:



Cc: Jenny Jones – AECI; Jason Pokorny – Haley & Aldrich, Inc.