

MEMORANDUM

17 April 2018
File No. 128064-006

SUBJECT: Written Closure Plan
Associated Electric Cooperative, Inc.
Thomas Hill Energy Center – Cell 002 West
Clifton Hill, MO

Associated Electric Cooperative, Inc. (AECI) previously operated the inactive coal combustion residuals (CCR) surface impoundment referred to as Cell 002 West at the Thomas Hill Energy Center (THEC) located in Clifton Hill, MO. Based on the USEPA's issued CCR Rule Partial Vacatur in 2016, the inactive Cell 002 West at the THEC is subject to applicable requirements of the CCR Rule. The inactive status of the impoundment is understood to no longer make the unit exempt from several portions of the CCR Rule. This Written Closure Plan (Plan) addresses the requirements of §257.102 *Criteria for conducting the closure or retrofit of CCR units*, specifically section §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 CFR Part 257 (CCR Rule) effective 19 October 2015. The information required for the Plan for Cell 002 West is presented in the following sections in accordance with §257.102(b) of the CCR Rule.

This Plan has been developed based upon information provided by AECI and describes the CCR impoundment, closure elements, a general schedule for closure, and steps required to amend the Plan in the future if necessary. This plan describes closing the impoundment by CCR removal. If AECI decides to close the impoundment by closure in-place instead of closure by removal, this plan will be amended as such in the future.

§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 impoundment, 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:

Closure by Removal

1. Finalize detailed construction plans for closure.

2. Obtain written Professional Engineer (PE) certification that design of the construction plan for closure meets the requirements of the CCR Rule.
3. No later than the date closure is initiated, prepare a notification of intent to close a CCR unit and place notification in the facility operating record. The notification of intent to close must include the PE certification from Step 2.
4. Complete removal of CCR within 5-years of commencing closure activities, unless allowable extensions are determined appropriate and certified.
5. Obtain PE certification verifying closure has been completed in accordance with this closure plan and the requirements of the CCR Rule.
6. Within 30-days of completion of closure of the CCR unit, prepare a notification of closure of a CCR unit and place notification in the facility operating record. The notification of closure must include the PE certification from step 8.

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

For closure by removal and following unwatering of the unit, the CCR materials will be removed from Cell 002 West and areas that have been affected by releases from the impoundment will be decontaminated. Once CCR have been removed, some portion of the subgrade soils may be removed as determined necessary. The unit is planned to be retrofitted for either CCR or other non-CCR uses. AECl may also breach the berm to preclude the probability of the future impoundment of water. Finally, the groundwater monitoring network will be developed in accordance §257.90 through §257.94. Once the system is developed, the groundwater monitoring concentrations will be evaluated to determine if the established groundwater protection standards are met pursuant to §257.95(h).

§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.

§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. Since the groundwater monitoring program for the unit is currently being developed in accordance with the CCR Rule, AECl has yet to establish the groundwater protection standard established pursuant to §257.95(h). Once the unit commences closure, groundwater concentrations will be evaluated by comparing to the

determined protection standards and either the unit will meet those standards and be certified as closed or in the event that the statistically significant increases above the protection standards exist, managed in accordance with the requirements of the CCR Rule to meet the protection standards.

§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.

This is not applicable since the unit is planned for closure by removal.

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

The approximated maximum volume of CCR expected to be stored in the unit over the active life is approximately 72 acre-feet, if the impoundment is filled to its design total capacity, per the Annual Inspection report.

§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.

This is not applicable since the unit is planned for closure by removal.

§257.102(b)(1)(vi): A schedule for completing all activities necessary to satisfy the closure criteria in this sections, 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 in place criteria of the CCR Rule is provided below. The schedule lists the sequential steps that need to be taken to close the impoundment.

**AECI – THEC Cell 002 West
 Closure by Removal Schedule**

| Item # | Task Item | Completion Timeframe | | | | | |
|--------|---------------------------------------|----------------------|---|---|---|---|---|
| | | Closure (years) | | | | | |
| | | 1 | 2 | 3 | 4 | 5 | 6 |
| 1 | Notice of Intent to Close Impoundment | | | | | | |
| 2 | Prepare Construction Plans | | | | | | |
| 3 | PE Design Certification | | | | | | |
| 4 | Commence Closure | | | | | | |
| 5 | CCR Removal | | | | | | |
| 6 | Groundwater Protection Standards | | | | | | |
| 7 | PE Closure Certification | | | | | | |

Per §257.102(e)(3) closure of the impoundment has commenced when AECI 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 impoundment. Since the unit was inactive as of the effective date of the CCR Rule, and based on the Partial Vacatur in 2016, AECI will complete closure in the allowable timeframes including any closure time extensions in accordance with §257.102(f).

§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.*

AECI will assess the Plan and amend the Plan whenever 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, the Plan will be revised no later than 30 days following the triggering event.

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

A record of amendments to the plan will be tracked below. The latest version of the closure plan will be noted on the front cover of the plan.

| Version | Date | Description of Changes Made |
|---------|---------------|-----------------------------|
| 1 | 17 April 2018 | Initial Issuance |
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§257.102(b)(4): *The owner or operator of the CCR unit must obtain a written certification from a qualified professional engineer that the initial and any amendment of the written closure plan meets the requirements of this section.*

I certify that this initial written closure plan meets the USEPA's CCR Rule requirements of §257.102(b) for AECI's closure of Cell 002 West at the Thomas Hill Energy Center.

Signed: _____



Certifying Engineer

Print Name: Steven F. Putrich
Missouri License No.: 2014035813
Title: Project Principal
Company: Haley & Aldrich, Inc.

Professional Engineer's Seal:

