



Your Touchstone Energy® Cooperative 

## **Green Station CCR Landfill**

### **Disposal of Coal Combustion Residuals (CCR) from Electric Utilities Final Rule Closure and Post-closure Care Plan**

**October 11, 2016**

**Prepared By:**



**Project ID: 160029A**

**Big Rivers Electric Corporation  
Disposal of Coal Combustion Residuals (CCR) from Electric Utilities Final Rule  
Closure and Post-closure Care Plan**

**CCR Landfill Information**

Name: Green Station CCR Landfill  
Operator: Sebree Generating Station  
Address: 9000 Highway 2096  
Robards, Kentucky 42452

**Qualified Professional Engineer**

Name: David A. Lamb  
Company: Associated Engineers, Inc.  
Kentucky P.E. Number: 17822

**Regulatory Applicability**

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 and a written post-closure care plan consistent with recognized and generally accepted good engineering practices as specified below. The owner or operator of an existing CCR unit must prepare the written initial closure and post-closure care plans no later than October 17, 2016 as follows:

**§ 257.102 Criteria for conducting the closure or retrofit of CCR units.**

- (a) Closure of a CCR unit or any lateral expansion of a CCR unit must be completed either by leaving the CCR in place and installing a final cover system or through removal of the CCR and decontamination of the CCR unit, as described in paragraphs (b) through (j) of this section. Retrofit of a CCR surface impoundment must be completed in accordance with the requirements in paragraph (k) of this section.
- (b) *Written closure plan - (1) Content of the plan.* 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.
  - (i) A narrative description of how the CCR unit will be closed in accordance with this section.

- (ii) If closure of the CCR 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.
  - (iii) If closure of the CCR 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.
  - (iv) An estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit.
  - (v) An 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.
  - (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 surface impoundment 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.
- (c) Closure by removal of CCR. 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 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.
- (d) Closure performance standard when leaving CCR in place - (1) The owner or operator of a CCR unit must ensure that, at a minimum, the CCR unit is closed in a manner that will:
- (i) Control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere;

- (ii) Preclude the probability of future impoundment of water, sediment, or slurry;
- (iii) Include measures that provide for major slope stability to prevent the sloughing or movement of the final cover system during the closure and post-closure care period;
- (iv) Minimize the need for further maintenance of the CCR unit; and
- (v) Be completed in the shortest amount of time consistent with recognized and generally accepted good engineering practices.

**§ 257.103 Alternative closure requirements.**

The owner or operator of a CCR landfill, CCR surface impoundment, or any lateral expansion of a CCR unit that is subject to closure pursuant to § 257.101(a)[detected at statistically significant levels above the groundwater protection standard], (b)(1) [ not demonstrated compliance with any location standard], or (d)[not demonstrated compliance with the location restriction for unstable areas], may continue to receive CCR in the unit provided the owner or operator meets the requirements of either paragraph (a) or (b) of this section.

(a)(1) *No alternative CCR disposal capacity.* Notwithstanding the provisions of § 257.101(a), (b)(1), or (d), a CCR unit may continue to receive CCR if the owner or operator of the CCR unit certifies that the CCR must continue to be managed in that CCR unit due to the absence of alternative disposal capacity both on-site and off-site of the facility.

(b)(1) *Permanent cessation of a coal-fired boiler(s) by a date certain.* Notwithstanding the provisions of § 257.101(a), (b)(1), and (d), a CCR unit may continue to receive CCR if the owner or operator certifies that the facility will cease operation of the coal- fired boilers within the timeframes specified in paragraphs (b)(2) through (4) of this section, but in the interim period (prior to closure of the coal-fired boiler), the facility must continue to use the CCR unit due to the absence of alternative disposal capacity both on- site and off-site of the facility.

**§ 257.104 Post-closure care requirements.**

(a) *Applicability.*

- (1) Except as provided by either item (2) or (3) of this section, post-closure requirements apply to the owners or operators of CCR landfills, CCR surface impoundments, and all lateral expansions of CCR units that are subject to the closure criteria under § 257.102.
- (2) An owner or operator of a CCR unit that elects to close a CCR unit by removing CCR as provided by § 257.102(c) is not subject to the post- closure care criteria under this section.
- (3) An owner or operator of an inactive CCR surface impoundment that elects to close a CCR unit pursuant to the requirements under § 257.100(b) [Inactive Surface Impoundments] is not subject to the post-closure care criteria under this

section.

(b) *Post-closure care maintenance requirements.* Following closure of the CCR unit, the owner or operator must conduct post-closure care for the CCR unit, which must consist of at least the following:

(1) Maintaining the integrity and effectiveness of the final cover system, including making repairs to the final cover as necessary to correct the effects of settlement, subsidence, erosion, or other events, and preventing run-on and run-off from eroding or otherwise damaging the final cover;

(c) *Post-closure care period.*

(1) Except as provided by paragraph (c)(2) of this section, the owner or operator of the CCR unit must conduct post-closure care for 30 years.

(2) If at the end of the post-closure care period the owner or operator of the CCR unit is operating under assessment monitoring in accordance with § 257.95 [Assessment Monitoring Program], the owner or operator must continue to conduct post-closure care until the owner or operator returns to detection monitoring in accordance with § 257.95.

(d) *Written post-closure plan*

(1) *Content of the plan.* The owner or operator of a CCR unit must prepare a written post-closure plan that includes, at a minimum, the information specified in paragraphs (d)(1)(i) through (iii) of this section.

(i) A description of the monitoring and maintenance activities required in paragraph (b) of this section for the CCR unit, and the frequency at which these activities will be performed;

(ii) The name, address, telephone number, and email address of the person or office to contact about the facility during the post-closure care period; and

(iii) A description of the planned uses of the property during the post-closure period. Post-closure use of the property shall not disturb the integrity of the final cover, liner(s), or any other component of the containment system, or the function of the monitoring systems unless necessary to comply with the requirements in this subpart. Any other disturbance is allowed if the owner or operator of the CCR unit demonstrates that disturbance of the final cover, liner, or other component of the containment system, including any removal of CCR, will not increase the potential threat to human health or the environment. The demonstration must be certified by a qualified professional engineer, and notification shall be provided to the State Director that the demonstration has been placed in the operating record and on the owners or operator's publicly accessible Internet site.

(2) Deadline to prepare the initial written post-closure plan - Existing CCR landfills and

existing CCR surface impoundments. No later than October 17, 2016.

(3) Amendment of a written post-closure plan.

(i) The owner or operator may amend the initial or any subsequent written post-closure plan developed pursuant to paragraph (d)(1) of this section at any time.

(ii) The owner or operator must amend the written closure plan whenever:

(A) There is a change in the operation of the CCR unit that would substantially affect the written post-closure plan in effect; or

(B) After post-closure activities have commenced, unanticipated events necessitate a revision of the written post-closure plan.

(iii) The owner or operator must amend the written post-closure plan at least 60 days prior to a planned change in the operation of the facility or CCR unit, or no later than 60 days after an unanticipated event requires the need to revise an existing written post-closure plan. If a written post-closure plan is revised after post-closure activities have commenced for a CCR unit, the owner or operator must amend the written post-closure plan no later than 30 days following the triggering event.

(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 post-closure plan meets the requirements of this section.

(e) *Notification of completion of post-closure care period.* No later than 60 days following the completion of the post-closure care period, the owner or operator of the CCR unit must prepare a notification verifying that post-closure care has been completed. The notification must include the certification by a qualified professional engineer verifying that post-closure care has been completed in accordance with the closure plan specified in paragraph (d) of this section and the requirements of this section. The owner or operator has completed the notification when it has been placed in the facility's operating record.

### **Description of Landfill**

An aerial photo of the CCR unit is provided as Attachment A and an excerpt from U.S. Geological Survey (USGS) 7.5 minute Robards and Delaware topographic quadrangle maps showing the location of the CCR unit is provided as Attachment B.

The CCR unit is used for the placement of coal combustion residual material; currently fly ash, bottom ash and related material. The approximate total volume of CCR contained in the unit at the time of inspection is 20.3 million cubic yards. This volume was calculated from available flight derived baseline topography compared to December 2015 flight derived topographic contours. The Green CCR landfill is raised above adjacent ground to a maximum

elevation of approximately 600 feet AMSL. The original ground surface within the landfill footprint was irregular and the predominant features were small stream valleys draining towards the Green River which is located just east of the landfill; and towards Groves Creek which is located just south of the landfill.

### **Green CCR Landfill Closure Plan**

The closure plan for the Green CCR landfill includes, at a minimum:

1. Narrative description of how the CCR unit will be closed in accordance with this section:

At any time that closure may occur, the Green CCR landfill will be closed with existing CCR in place. Temporary cover will be placed on areas where placement of CCR has been completed until such time as the required final low permeability cover material is placed. A vertical expansion wall is currently being constructed which will enable placement of material on the already established landfill footprint and facilitate additional placement of CCR material on these areas. Engineering designs for the vertical expansion were developed by HDR Engineering, Inc. and are on file at the Big Rivers Electric Corporation corporate office in Henderson, Kentucky. The final cover system will be designed to minimize infiltration and erosion, and at a minimum, meet the requirements listed below or the requirements of an alternative final cover system.

- a. The permeability of the final cover system must be less than or equal to the permeability of any bottom liner system or natural subsoils present, or a permeability no greater than  $1 \times 10^{-5}$  centimeters/second (cm/sec), whichever is less.
  - b. The infiltration of liquids through the CCR unit must be minimized by the use of an infiltration layer that contains a minimum of 18 inches of earthen material.
  - c. The erosion of the final cover system must be minimized by the use of an erosion layer that contains a minimum of 6 inches of earthen material that is capable of sustaining native plant growth.
  - d. The disruption of the integrity of the final cover system must be minimized through a design that accommodates settling and subsidence.
2. If closure of the CCR 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.

It is not proposed that the closure of the Green CCR landfill will include removal of CCR material from the unit.

3. If closure of the CCR 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 Green CCR landfill will be closed and covered with the CCR material in place. CCR material will be covered by 24 inches of temporary cover material until the final low permeability soil cover is placed to facilitate closure. The 18-inch low permeability soil cover will be placed and compacted to meet the required permeability of not more than  $1 \times 10^{-5}$  centimeters/second (cm/sec). Appropriate soils testing will be conducted to document that the required thickness and permeability specifications have been met and may include laboratory and field testing procedures. The final cover will be vegetated with appropriate cover species and erosion of the final cover system must be minimized by the use of an erosion layer that contains a minimum of 6 inches of earthen material that is capable of sustaining native plant growth. The disruption of the integrity of the final cover system must be minimized through a design that accommodates settling and subsidence.

4. An estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit.

The approximate total volume of CCR contained in the unit at the time of inspection is 20.3 million cubic yards. This volume was calculated from available flight derived baseline topography compared to December 2015 flight derived topographic contours. The Green CCR landfill is raised above adjacent ground to a maximum elevation of approximately 600 feet AMSL.

5. An estimate of the largest area of the CCR unit ever requiring a final cover at any time during the CCR unit's active life.

The estimated largest area of the CCR unit ever requiring a final cover at any time during the CCR unit's active life is approximately 85 acres.

6. 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 surface impoundment 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 extensions sought

under paragraph (f)(2) of this section.

The closure of the Green CCR landfill will be implemented within any required timeframes per applicable environmental rules and regulations and in consideration of any operational and financial constraints. The time required to complete closure is proposed not to exceed five years from commencing closure activities. Based on the current fill rate the landfill will not be closed until beyond the year 2032.

### **Green CCR Landfill Post-closure Plan**

The post-closure plan for the Green CCR landfill includes, at a minimum:

1. The monitoring and maintenance activities will include maintaining the integrity and effectiveness of the final cover system, including making repairs to the final as necessary to correct the effects of settlement, subsidence, erosion, or other events, and preventing run-on and run-off from eroding or otherwise damaging the final cover;
2. The name, address, telephone number, and email address of the person or office to contact about the facility during the post-closure care period follows:

Thomas Shaw, Director Environmental  
Big Rivers Electric Corporation  
Address: 201 3rd Street Henderson, KY 42420  
Telephone Number: 270-844-6031  
Email Address: Thomas.Shaw@bigrivers.com

3. The planned uses of the property during the post-closure period will consist of maintaining the integrity of the power generating facility. Post-closure use of the property will not disturb the integrity of the final cover, liner(s), or any other component of the containment system, or the function of the monitoring systems unless necessary to comply with the requirements in the rule or other environmental regulations or to facilitate operating considerations that are allowed if the owner or operator of the CCR unit demonstrates that disturbance of the final cover, liner, or other component of the containment system, including any removal of CCR, will not increase the potential threat to human health or the environment. The demonstration must be certified by a qualified professional engineer.

### **Sources of Information**

Geotechnical and other information provided by Associated Engineers, Inc.

Engineering design drawings and other information provided by Big Rivers Electric Corporation

United States Geological Survey U.S. Geological Survey (USGS) 7.5 minute Robards and Delaware topographic quadrangle maps

**Professional Engineer Certification [Per 40 CFR § 257.102-104]  
Green CCR Landfill Closure and Post-closure Care Plan**

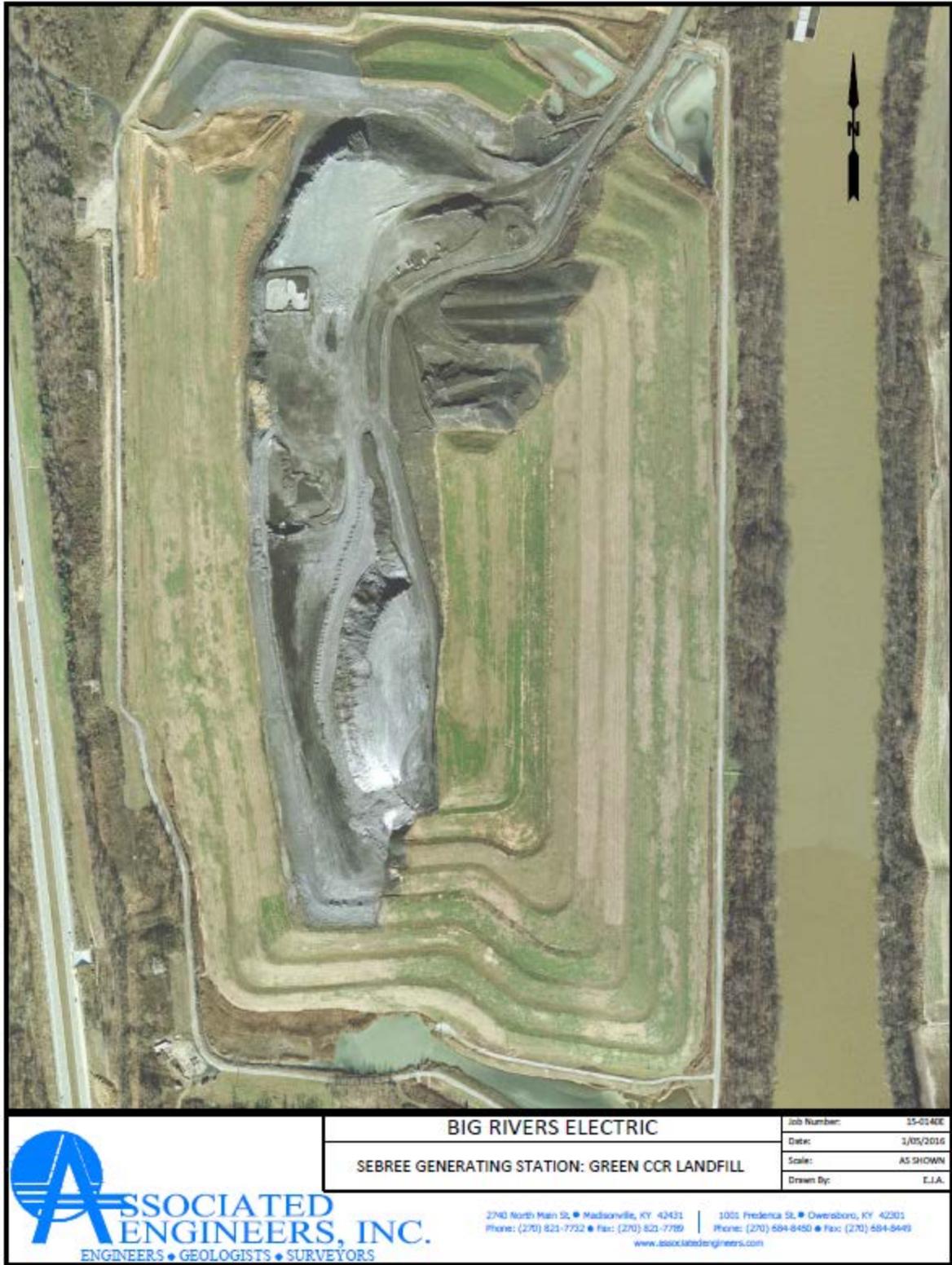
I hereby certify that myself or an agent under my review has prepared this Closure and Post-closure Care Plan (Plan), and being familiar with the provisions of the final rule to regulate the disposal of coal combustion residuals (CCR) as solid waste under subtitle D of the Resource Conservation and Recovery Act (RCRA), attest that this Plan has been prepared in accordance with good engineering practices and meets the intent of 40 CFR Part 257.102-104. To the best of my knowledge and belief, the information contained in this Plan is true, complete, and accurate.

  
\_\_\_\_\_

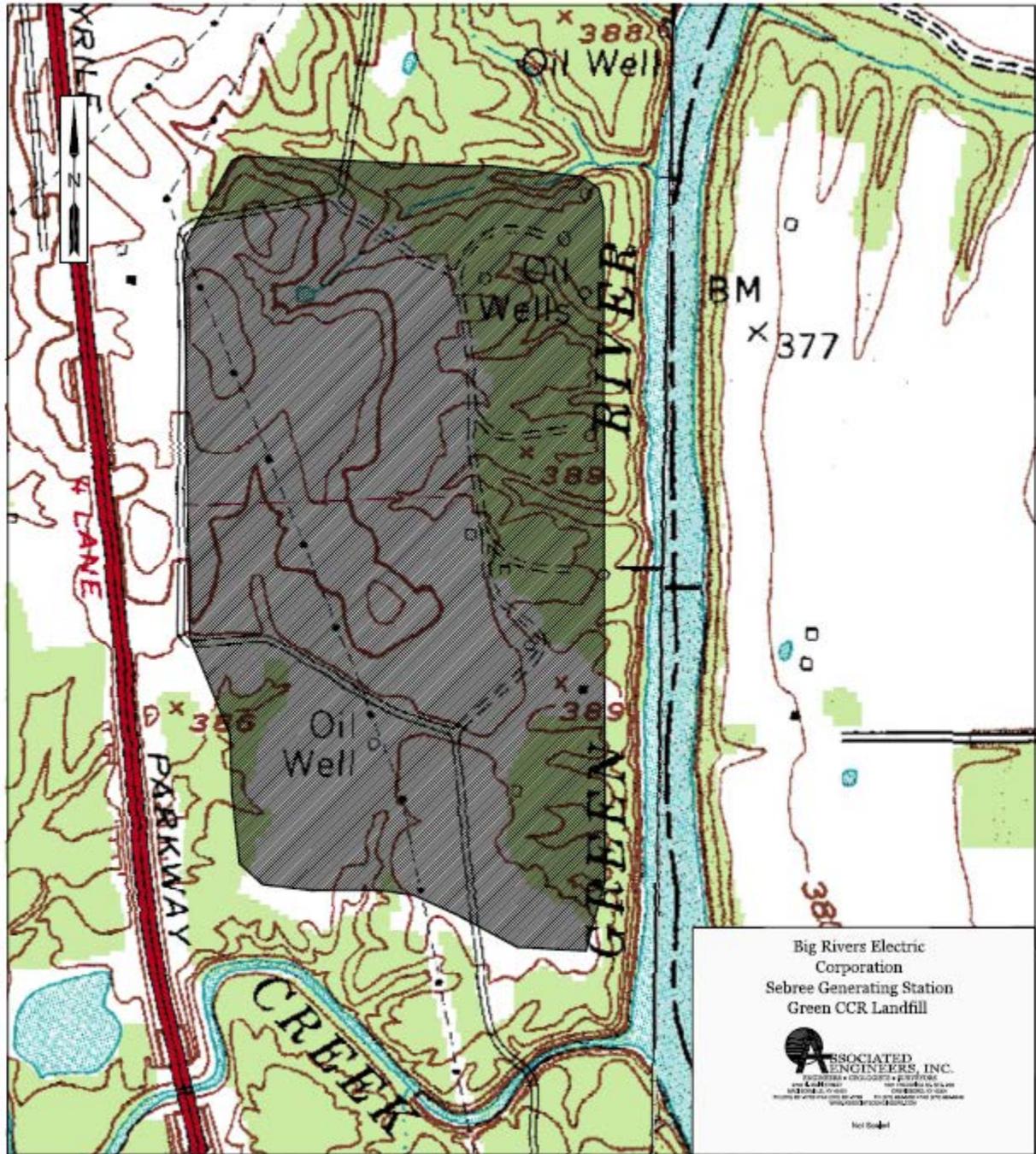
David A. Lamb P.E.  
State of Kentucky License No. 17822



Date: 10/11/16



Attachment A. Aerial Photo of the Green CCR Landfill



Attachment B. Topographic Map showing the Green CCR Landfill



# Closure Plan for the Green Station CCR Surface Impoundment



**Big Rivers Electric Corporation**  
Robert D. Green Generating Station

**Coal Combustion Residual Rule Compliance**



# **Closure Plan for the Green Station CCR Surface Impoundment**

**Prepared for**

**Big Rivers Electric Corporation  
Robert D. Green Generating Station  
Roberts, Kentucky**

**Revision 2  
11/24/2020**

**Prepared by**

**Burns & McDonnell Engineering Company, Inc.  
Kansas City, Missouri**

## INDEX AND CERTIFICATION

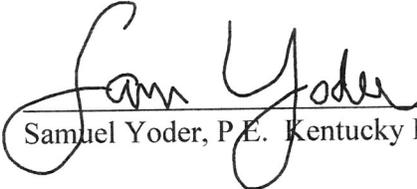
### Big Rivers Electric Corporation Closure Plan for the Green Station CCR Surface Impoundment

#### Report Index

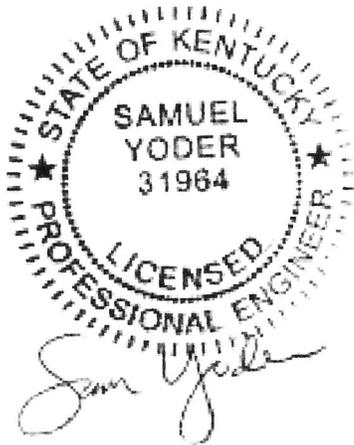
<u>Chapter Number</u>	<u>Chapter Title</u>	<u>Number of Pages</u>
1.0	Introduction	1
2.0	Details of Closure	5
3.0	Revisions and Amendments	1
4.0	Record of Revisions and Updates	1
Appendix A	Site Plan	1

#### Certification

I hereby certify, as a Professional Engineer in the State of Kentucky, that the information in this document was assembled under my direct supervisory control. This report is not intended or represented to be suitable for reuse by Big Rivers Electric Corporation or others without specific verification or adaptation by the Engineer.

  
\_\_\_\_\_  
Samuel Yoder, P.E. Kentucky License #31964

Date: 11/24/2020  
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## TABLE OF CONTENTS

	<u>Page No.</u>
<b>1.0 INTRODUCTION.....</b>	<b>1-1</b>
<b>2.0 DETAILS OF CLOSURE .....</b>	<b>2-1</b>
2.1 Impoundment Description .....	2-1
2.1.1 CCR Inventory and Extent.....	2-1
2.2 Closure Method.....	2-1
2.2.1 Final Cover System.....	2-3
2.2.2 Final Cover Schedule.....	2-5
<b>3.0 REVISIONS AND AMENDMENTS .....</b>	<b>3-1</b>
<b>4.0 RECORD OF REVISIONS AND UPDATES .....</b>	<b>4-1</b>
<b>APPENDIX A - SITE PLAN</b>	

## LIST OF FIGURES

	<b><u>Page No.</u></b>
Figure 2-1: Typical Final Cover System.....	2-3
Figure 2-2: Typical Alternative Final Cover System.....	2-4

## LIST OF ABBREVIATIONS

<b><u>Abbreviation</u></b>	<b><u>Term/Phrase/Name</u></b>
BREC	Big Rivers Electric Corporation
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
cm/sec	centimeters per second
EPA	Environmental Protection Agency
FGD	Flue Gas Desulfurization
RCRA	Resource Conservation and Recovery Act
USACE	United State Army Corps of Engineers
U.S.C.	United States Code
WMB	Water Mass Balance

## 1.0 INTRODUCTION

On April 17, 2015, the Environmental Protection Agency (EPA) issued the final version of the federal Coal Combustion Residuals (CCR) Rule to regulate the disposal of coal combustion residual materials generated at coal-fired units. The rule is administered as part of the Resource Conservation and Recovery Act (RCRA, 42 United States Code [U.S.C.] §6901 et seq.), using the Subtitle D approach.

Big Rivers Electric Corporation (BREC) is subject to the CCR Rule and as such must develop a Closure Plan per 40 Code of Federal Regulations (CFR) §257.102. This document serves as BREC's Closure Plan for the Green Station (Green) CCR Surface Impoundment (Ash Pond).

According to §257.102(b)(1), the Closure Plan must contain the following:

- A description of how the CCR unit will be closed.
  - For in-place closure: A description of the final cover system, the methods for installing the final cover system, and the methods for achieving compliance with the standards outlined in §257.102(d).
  - For closure by removal: A description of the procedures to remove the CCR and decontaminate the CCR unit as outlined in §257.102(c).
- An estimate of the maximum amount of material ever stored in the CCR unit over its active life.
- An estimate of the largest area of the CCR unit ever requiring a final cover as required by §257.102(d) at any time during the CCR unit's active life.
- A schedule for completing closure activities, including the anticipated year of closure and major milestones for permitting and construction activities.

The seal on this report certifies that this document meets the requirements of 40 CFR §257.102(b). This closure plan is in addition to, not in place of, any other applicable site permits, environmental standards, or work safety practices.

## 2.0 DETAILS OF CLOSURE

### 2.1 Impoundment Description

Green is a coal-fueled electric generating station near Robards, Kentucky. The plant consists of Unit 1 and Unit 2 which are respectively 250MW and 242MW (gross) units commercialized in 1979 and 1981 respectively. Units 1 and 2 burn a blend of bituminous coal (pulverized). The plant utilizes the Ash Pond to manage the CCR and non-CCR wastestreams. The Ash Pond was constructed when the plant was built and has been in service for the life of the plant. The CCR wastestreams that are managed in the Ash Pond include sluiced bottom ash, economizer ash and Flue Gas Desulfurization (FGD) wastewater. All fly ash is now handled dry. The various non-CCR wastewaters routed to the Ash Pond originate from the Unit 1 and 2 boiler sumps, metal cleaning wastes, clarifier blowdown, bottom ash hopper seal water, miscellaneous drains including roof drains, landfill leachate, and various stormwater sources. A site plan is included in Appendix A.

#### 2.1.1 CCR Inventory and Extent

Depth of impounded water and CCR is 3 feet and 18 feet (at respective locations of maximum impounded water and CCR depths). Elevation of impounded water and CCR is 396 feet and 400 feet, respectively, above mean sea level. These approximate depths and respective elevations are based on the most recent (October 2018) flight derived topographic contours and bathymetric survey data.

The remaining storage capacity is approximately 230,000 cubic yards (if CCR can be placed to the elevation of the current water surface). This volume was calculated based on the maximum allowable storage volume and the current volume of CCR stored in the facility based on the most recent bathymetric survey.

The approximate volume of CCR currently stored in the Ash Pond is 1,000,000 cubic yards. The maximum storage capacity is 1,230,000 cubic yards. This volume was calculated based on the most recent bathymetric survey, and the best available as-built data for the construction prior to placement of CCR.

### 2.2 Closure Method

The CCR Rule allows for CCR Units to be closed through removal of CCR or by leaving CCR material in-place. BREC intends to close the existing Ash Pond using a hybrid approach by consolidating CCR material (approximately 1 million cubic yards) within the existing Ash Pond area. The CCR material would be consolidated along the south side of the existing pond, where it will be capped with a CCR compliant system. This area accounts for approximately 16 acres that will require a final cover.

The remaining 10 acres will be closed by removal of CCR. This area will then be used as a water mass balance pond (WMB) for processing and holding of landfill leachate and stormwater.

To facilitate construction of the new water mass balance (WMB) pond and the pond closure, the existing non-CCR wastestreams will need to be managed. The pond water level will be lowered as much as feasible after ceasing the receipt of CCR and the permanent cessation of the coal-fired boilers and prior to the construction contractor coming on site. When the construction contractor begins construction, the remaining non-CCR wastestreams (essentially site stormwater and landfill leachate after the boilers cease coal-fired operations) will be managed using a series of temporary berms, ditches, and pumps to divert site stormwater to other locations. This will likely require KPDES permit modifications following the permanent cessation of the coal-fired boilers operation and the remediation of the coal pile to discharge water from the existing coal pile runoff pond to the Green River. Alternatively, the Contractor may choose to maintain a small portion of the current Ash Pond footprint to continue to receive these flows and pump them through a temporary treatment system to the existing outfall structure. The sequencing of construction and means and methods for the water management will be determined by the construction contractor once a contract is finalized with BREC.

While managing the incoming stormwater and leachate flows, the Contractor will initiate grading and relocating CCR material for the WMB pond and pond closure and continue dewatering and removing the interstitial water in the CCR material (with drainage ditches or potentially an engineered dewatering system) so that the consolidated CCR material is stabilized to allow for the closure in place to be performed in phases to meet the performance standards as required by §257.102(d). The discharge will be directed to the KPDES permitted Outfall #009 (the Ash Pond outfall), with temporary treatment systems installed if required by the permit. As grading is completed in certain areas, the contractor will begin forming a 10-acre WMB Pond to treat remaining process and stormwater flows from Green prior to discharge. The approximate volume of CCR in the ash pond is 1,000,000 cubic yards. Approximately 400,000 cubic yards will be removed for the WMB pond construction. The Contractor will remove the CCR material from the portion of the impoundment that will receive the new WMB pond berm and begin placing fill for the new berm. While this fill is placed in lifts, the Contractor will continue removing CCR from the WMB portion of the pond and compacting it on the outside of the berm in the portion of the pond to be capped in place.

In addition to the new berm, the work for the WMB construction may consist of the installation of a HDPE geomembrane liner, 12-inches of protective cover material, and 18-inches of riprap for the pond side slopes. This liner system will be finalized during detailed design and permitting for the WMB Pond.

Concurrent to the WMB Pond lining work, the contractor will begin placing the final cover system over the closed in place CCR material.

When the grading is complete and the WMB is in service the remaining stormwater and non-CCR wastestreams (landfill leachate) will be rerouted to the new pond and will continue to discharge through the existing KPDES outlet. The contractor will then finalize construction by seeding and stabilizing all disturbed areas.

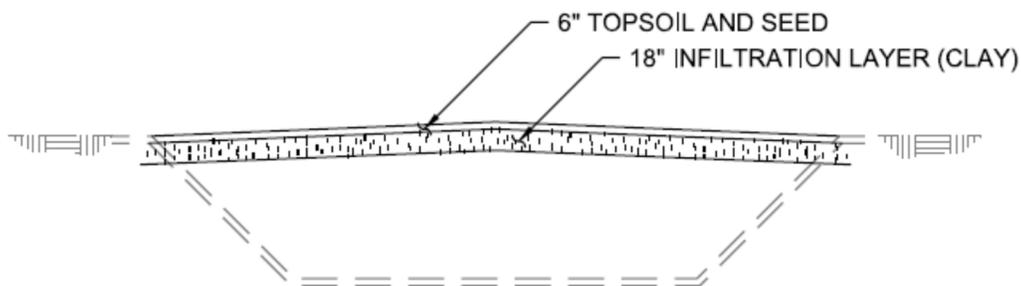
## 2.2.1 Final Cover System

Pursuant to §257.102(d)(3)(i), the final cover system must be designed and constructed to meet the following criteria:

- Have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present, or a permeability no greater than  $1 \times 10^{-5}$  centimeters per second (cm/sec), whichever is less.
- The infiltration of liquids through the closed CCR unit must be minimized by use of an infiltration layer that contains a minimum of 18 inches of earthen material.
- The erosion of the final cover system must be minimized by use of an erosion layer that contains a minimum of six inches of earthen material capable of sustaining native plant growth.
- The disruption of the integrity of the final cover system must be minimized through a design that accommodates settling and subsidence.
- The owner or operator may select an alternative final cover system design, provided the alternative final cover system meets the above requirements.

The typical final cover system will consist of an 18-inch thick, earthen (clay) infiltration layer with a 6-inch thick topsoil erosion layer capable of sustaining native plant growth. A cross section of the typical final cover system is shown in Figure 2-1.

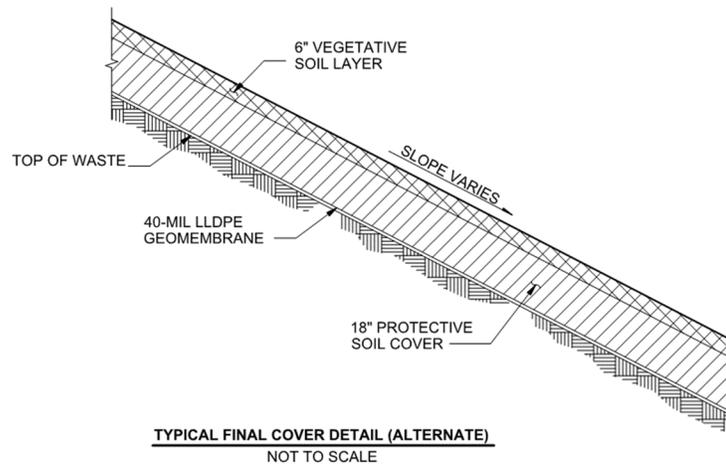
**Figure 2-1: Typical Final Cover System**



Because the Ash Pond bottom was not constructed to meet low permeability specifications, the cover system will be designed to meet the permeability limit of  $1 \times 10^{-5}$  cm/sec noted in the CCR Rule. The required permeability value will be achieved using clay with properties meeting the developed specification criteria. The infiltration layer will be constructed according to proper quality control methods.

An alternative final cover system may be utilized in lieu of the above described typical final cover system, over the Ash Pond (see Figure 2-2). This alternative system uses a geomembrane component to achieve the minimum permeability requirements of the CCR Rule, rather than relying on the permeability of the 18-inches of infiltration material.

**Figure 2-2: Typical Alternative Final Cover System**



### 2.2.1.1 Geometry and Stormwater Management

The geometry and stormwater management controls of the closed impoundment will allow the CCR unit to meet the following requirements as outlined in §257.102(d) of the CCR Rule:

- Control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere.
- Prevent future impoundment of water.
- Provide for slope stability to protect against sloughing or movement of the final cover system.

The final closure system grade will slope at a minimum of 2.0 percent over the capped Ash Pond surface to prevent the collection of standing water and limit the velocity of storm water runoff to reduce the

potential for soil erosion. Intermediate swales will be utilized with a minimum slope of 2.0 percent, as appropriate, to limit the maximum overland flow distance, thereby limiting the chance for ponding water, as well as limiting the infiltration of run-off. The intermediate swales will collect area runoff and convey it to the WMB Pond which will discharge through an KPDES permitted outlet.

The period for greatest soil erosion will be immediately after placement of the topsoil material before vegetation is established. Manufactured erosion control products, as well as a seed mix containing quick-growth seed varieties, will aid in minimizing erosion during this timeframe.

### 2.2.1.2 Integrity of the Final Cover

Settling and subsidence of the final cover system is expected to be minimal. Settlement would potentially be caused by consolidation of the CCR material or underlying natural subsoils under new loads from construction activities; however, this settlement will likely occur during site grading activities and is expected to be minimal after the cover is installed. CCR material will be placed in a controlled manner to minimize post-construction installation settlement. The underlying natural subsoils at the site are not prone to long-term settlement.

### 2.2.2 Final Cover Schedule

According to §257.101 of the CCR Rule, closure of the existing impoundment must commence no later than 6 months following the date on which a closure event is triggered, or no later than 30 days following the last known receipt of CCR or non-CCR wastewater by the impoundment. The current schedule is for BREC to cease sending CCR to the Ash Pond in the late spring of 2022. BREC intends to prepare design drawings, obtain the appropriate permits and award the contract for closure prior to removing the pond from service so that closure can commence within 30 days.

The estimated closure schedule is as follows:

Mobilization	June 2022
Pond Dewatering	June 2022 – August 2022
Cut/Fill and Removal of CCR	August 2022 – May 2023
Winter Shutdown	December 2022 – March 2023
Install final cover system	May 2023 – July 2023
WMB Construction	May 2023 – August 2023
Topsoil and Seeding	August 2023 – September 2023
Deadline to complete closure	October 17, 2023

### **2.2.2.1 Closure Completion**

The CCR Rule does not define “closure complete” for CCR units. For the purposes of this Closure Plan, closure of the impoundment is considered complete when the final cover system is installed, and the applicable construction completion documentation is finalized.

Within 30 days of completion of closure of the impoundment, BREC must prepare a notification of closure of the impoundment and place it in the facility’s CCR Operating Record and on BREC’s CCR public website. This notification shall include certification by a qualified professional engineer in the State of Kentucky verifying that closure has been completed in accordance with this Closure Plan and the requirements of §257.102. Additionally, BREC must record a notation on the deed to the property following completion of closure of the impoundment in accordance with §257.102(i). The purpose of this notation is to inform any potential future owner of the property of the previous use of the land, and that the land is restricted by post-closure care requirements.

### **3.0 REVISIONS AND AMENDMENTS**

The initial Closure Plan was placed in the CCR Operating Record on October 11, 2016. If the Closure Plan is revised, the written Closure Plan will be amended no later than 30 days following the triggering event. Additionally, the written Closure Plan will be amended at least 60 days prior to a planned change in the operation of the Impoundment, or no later than 60 days after an unanticipated event. The initial Closure Plan and any amendment will be certified by a qualified professional engineer in the State of Kentucky for meeting the requirements of §257.102 of the CCR Rule. All amendments and revisions must be placed on the CCR public website within a reasonable amount of time following placement in the facility's CCR Operating Record. A record of revisions made to this document is included in Section 4.0 of this document.

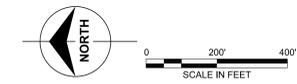


**APPENDIX A - SITE PLAN**



Scale For Microfitting  
 Millimeters  
 Inches

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
L



**PRELIMINARY - NOT FOR CONSTRUCTION**

no.	date	by	ckd	description	no.	date	by	ckd	description
A	09/11/20	MDB	ETT	ISSUED FOR OWNER REVIEW					

**BURNS MEDONNELL**  
 9400 WARD PARKWAY  
 KANSAS CITY, MO 64114  
 816-333-9400

designed: M. BLEYTHING  
 detailed: J. RIDDER

**Big Rivers**  
 ELECTRIC CORPORATION

Your Touchstone Energy® Cooperative

ROBERT D. GREEN STATION  
 WEBSTER COUNTY, KENTUCKY

BREC GREEN STATION  
 CCR & ELG COMPLIANCE PROJECT  
 ASH POND CLOSURE SITE PLAN

project: 126878 | contract: \_\_\_\_\_  
 drawing: **SK-C001** | rev. **A**  
 sheet of \_\_\_\_\_ sheets  
 file 126878SK-C001.DGN



CREATE AMAZING.

Burns & McDonnell World Headquarters  
9400 Ward Parkway  
Kansas City, MO 64114  
O 816-333-9400  
F 816-333-3690  
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Your Touchstone Energy® Cooperative 

## **Reid/HMPL Station CCR Surface Impoundment**

### **Disposal of Coal Combustion Residuals (CCR) from Electric Utilities Final Rule Closure and Post-Closure Care Plan**

**October 11, 2016**

**Prepared By:**



**Project ID: 160027C**

**Big Rivers Electric Corporation**  
**Disposal of Coal Combustion Residuals (CCR) from Electric Utilities Final Rule**  
**Closure and Post-Closure Care Plan**

**CCR Surface Impoundment Information**

Name: Reid/HMPL Station CCR Surface Impoundment  
Operator: Sebree Generating Station  
Address: 9000 Highway 2096  
Robards, Kentucky 42452  
CCR Unit Identification Number: Kentucky State Dam Inventory System ID No. 0855

**Qualified Professional Engineer**

Name: David A. Lamb  
Company: Associated Engineers, Inc.  
Kentucky P.E. Number: 17822

**Regulatory Applicability**

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 and a written post-closure care plan consistent with recognized and generally accepted good engineering practices as specified below. The owner or operator of an existing CCR unit must prepare the written initial closure and post-closure care plans no later than October 17, 2016 as follows:

**§ 257.102 Criteria for conducting the closure or retrofit of CCR units.**

- (a) Closure of a CCR unit or any lateral expansion of a CCR unit must be completed either by leaving the CCR in place and installing a final cover system or through removal of the CCR and decontamination of the CCR unit, as described in paragraphs (b) through (j) of this section. Retrofit of a CCR surface impoundment must be completed in accordance with the requirements in paragraph (k) of this section.
- (b) *Written closure plan - (1) Content of the plan.* 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.
  - (i) A narrative description of how the CCR unit will be closed in accordance with this

section.

- (ii) If closure of the CCR 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.
  - (iii) If closure of the CCR 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.
  - (iv) An estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit.
  - (v) An 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.
  - (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 surface impoundment 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.
- (c) Closure by removal of CCR. 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 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.
- (d) Closure performance standard when leaving CCR in place - (1) The owner or operator of a CCR unit must ensure that, at a minimum, the CCR unit is closed in a manner that will:
- (i) Control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated

run-off to the ground or surface waters or to the atmosphere;

- (ii) Preclude the probability of future impoundment of water, sediment, or slurry;
- (iii) Include measures that provide for major slope stability to prevent the sloughing or movement of the final cover system during the closure and post-closure care period;
- (iv) Minimize the need for further maintenance of the CCR unit; and
- (v) Be completed in the shortest amount of time consistent with recognized and generally accepted good engineering practices.

**§ 257.103 Alternative closure requirements.**

The owner or operator of a CCR landfill, CCR surface impoundment, or any lateral expansion of a CCR unit that is subject to closure pursuant to § 257.101(a)[detected at statistically significant levels above the groundwater protection standard], (b)(1) [ not demonstrated compliance with any location standard], or (d)[not demonstrated compliance with the location restriction for unstable areas], may continue to receive CCR in the unit provided the owner or operator meets the requirements of either paragraph (a) or (b) of this section.

(a)(1) *No alternative CCR disposal capacity.* Notwithstanding the provisions of § 257.101(a), (b)(1), or (d), a CCR unit may continue to receive CCR if the owner or operator of the CCR unit certifies that the CCR must continue to be managed in that CCR unit due to the absence of alternative disposal capacity both on-site and off-site of the facility.

(b)(1) *Permanent cessation of a coal-fired boiler(s) by a date certain.* Notwithstanding the provisions of § 257.101(a), (b)(1), and (d), a CCR unit may continue to receive CCR if the owner or operator certifies that the facility will cease operation of the coal- fired boilers within the timeframes specified in paragraphs (b)(2) through (4) of this section, but in the interim period (prior to closure of the coal-fired boiler), the facility must continue to use the CCR unit due to the absence of alternative disposal capacity both on- site and off-site of the facility.

**§ 257.104 Post-closure care requirements.**

(a) *Applicability.*

- (1) Except as provided by either item (2) or (3) of this section, post-closure requirements apply to the owners or operators of CCR landfills, CCR surface impoundments, and all lateral expansions of CCR units that are subject to the closure criteria under § 257.102.
- (2) An owner or operator of a CCR unit that elects to close a CCR unit by removing CCR as provided by § 257.102(c) is not subject to the post- closure care criteria under this section.
- (3) An owner or operator of an inactive CCR surface impoundment that elects to

close a CCR unit pursuant to the requirements under § 257.100(b) [Inactive Surface Impoundments] is not subject to the post-closure care criteria under this section.

(b) *Post-closure care maintenance requirements.* Following closure of the CCR unit, the owner or operator must conduct post-closure care for the CCR unit, which must consist of at least the following:

1. Maintaining the integrity and effectiveness of the final cover system, including making repairs to the final cover as necessary to correct the effects of settlement, subsidence, erosion, or other events, and preventing run-on and run-off from eroding or otherwise damaging the final cover;

(c) *Post-closure care period.*

(1) Except as provided by paragraph (c)(2) of this section, the owner or operator of the CCR unit must conduct post-closure care for 30 years.

(2) If at the end of the post-closure care period the owner or operator of the CCR unit is operating under assessment monitoring in accordance with § 257.95 [Assessment Monitoring Program], the owner or operator must continue to conduct post-closure care until the owner or operator returns to detection monitoring in accordance with § 257.95.

(d) *Written post-closure plan*

(1) *Content of the plan.* The owner or operator of a CCR unit must prepare a written post-closure plan that includes, at a minimum, the information specified in paragraphs (d)(1)(i) through (iii) of this section.

- (i) A description of the monitoring and maintenance activities required in paragraph (b) of this section for the CCR unit, and the frequency at which these activities will be performed;
- (ii) The name, address, telephone number, and email address of the person or office to contact about the facility during the post-closure care period; and
- (iii) A description of the planned uses of the property during the post-closure period. Post-closure use of the property shall not disturb the integrity of the final cover, liner(s), or any other component of the containment system, or the function of the monitoring systems unless necessary to comply with the requirements in this subpart. Any other disturbance is allowed if the owner or operator of the CCR unit demonstrates that disturbance of the final cover, liner, or other component of the containment system, including any removal of CCR, will not increase the potential threat to human health or the environment. The demonstration must be certified by a qualified professional engineer, and notification shall be provided to the State Director that the demonstration has been placed in the operating record and on the owners or operator's publicly accessible Internet site.

- (2) Deadline to prepare the initial written post-closure plan - Existing CCR landfills and existing CCR surface impoundments. No later than October 17, 2016.
  - (3) Amendment of a written post-closure plan.
    - (i) The owner or operator may amend the initial or any subsequent written post-closure plan developed pursuant to paragraph (d)(1) of this section at any time.
    - (ii) The owner or operator must amend the written closure plan whenever:
      - (A) There is a change in the operation of the CCR unit that would substantially affect the written post-closure plan in effect; or
      - (B) After post-closure activities have commenced, unanticipated events necessitate a revision of the written post-closure plan.
    - (iii) The owner or operator must amend the written post-closure plan at least 60 days prior to a planned change in the operation of the facility or CCR unit, or no later than 60 days after an unanticipated event requires the need to revise an existing written post-closure plan. If a written post-closure plan is revised after post-closure activities have commenced for a CCR unit, the owner or operator must amend the written post-closure plan no later than 30 days following the triggering event.
  - (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 post-closure plan meets the requirements of this section.
- (e) Notification of completion of post-closure care period. No later than 60 days following the completion of the post-closure care period, the owner or operator of the CCR unit must prepare a notification verifying that post-closure care has been completed. The notification must include the certification by a qualified professional engineer verifying that post-closure care has been completed in accordance with the closure plan specified in paragraph (d) of this section and the requirements of this section. The owner or operator has completed the notification when it has been placed in the facility's operating record.*

### **Description of Impoundment**

An aerial photo of the CCR unit is provided as Attachment A and an excerpt from U.S. Geological Survey (USGS) 7.5 minute Robards and Delaware topographic quadrangle maps showing the location of the CCR unit is provided as Attachment B.

The CCR unit has been in place for 40 plus years and is used for the placement of coal combustion residual material; currently slurried bottom ash. The immediate watershed that drains to the CCR unit, and in which the CCR unit is considered to be located, is unnamed and 25.45 acres in size.

The CCR unit is a combined incised/earthen embankment structure. Embankments form the west, south and east sides of the impoundment and the north side is incised. The original terrain on which the pond was constructed generally sloped toward the west. Although the Green River is located less than 0.5 miles from the site, the structure does not extend significantly into the floodplain. Underlying preconstruction soils consisted of Loring-Grenada, Loring-Zanesville-Wellston (Henderson County) and Loring-Wellston-Zanesville (Webster County) soil associations which are generally characterized as well drained to moderately well drained soils on nearly level to sloping uplands.

The embankment reaches its greatest relief of approximately 42 feet on the west side. The Burns & McDonnell Engineering Co. October 8, 1971 design drawings show the inboard slope and central core portion of the dike to be constructed of compacted soil fill and the outboard slope to be consisted of sand fill. A sand blanket drain was designed for the outboard third of the base of the dike for the majority of the length and the plans show a crushed limestone drainage layer with a minimum thickness of 18 inches topped with a minimum six inches thick sand layer which extends across the entire width of the dike cross section in the southwest corner. The plans also show a cut-off trench in the original ground below dike crest and extending for the entire length of the dike.

Depth of impounded water and CCR is 16 feet and 39 feet (at respective locations of maximum impounded water and CCR depths). Elevation of impounded water and CCR is 426 feet and 440 feet, respectively, above mean sea level. These approximate depths and respective elevations are based on the most recent (December 2015) flight derived topographic contours and bathymetric survey data.

The remaining storage capacity is approximately 85,000 cubic yards (if CCR can be placed to the elevation of the current water surface). This volume was calculated based on the maximum allowable storage volume and the current volume of CCR stored in the facility based on the most recent bathymetric survey.

The approximate volume of impounded water and CCR is 767,000 cubic yards (approximate water volume is 85,000 cubic yards and approximate CCR volume is 682,000 cubic yards). This volume was calculated based on the maximum storage capacity, the current amount of CCR stored in the facility based on the most recent bathymetric survey, and the best available as-built data for the structure construction prior to placement of CCR.

The impoundment discharge consists of a rectangular concrete drop structure with a variable height steel debris skimmer. The pool elevation can be controlled by adding or removing stop logs. The discharge structure connects to a 24-inch diameter smooth walled metal pipe underground conveyance.

### **Reid/HMPL CCR Impoundment Closure Plan**

The closure plan for the Reid/HMPL CCR impoundment includes, at a minimum:

1. Narrative description of how the CCR unit will be closed in accordance with this section:

At any time that closure may occur, the Reid/HMPL CCR impoundment will be closed with existing CCR in place. The material will be dewatered to enable the embankment soil materials to be placed on top of the CCR material and serve as cover material. The final cover system will be designed to minimize infiltration and erosion, and at a minimum, meet the requirements listed below or the requirements of an alternative final cover system.

- a. The permeability of the final cover system must be less than or equal to the permeability of any bottom liner system or natural subsoils present, or a permeability no greater than  $1 \times 10^{-5}$  centimeters/second (cm/sec), whichever is less. It has been determined and documented that the bottom of the impoundment was not constructed to meet low permeability specifications.
  - b. The infiltration of liquids through the CCR unit must be minimized by the use of an infiltration layer that contains a minimum of 18 inches of earthen material.
  - c. The erosion of the final cover system must be minimized by the use of an erosion layer that contains a minimum of 6 inches of earthen material that is capable of sustaining native plant growth.
  - d. The disruption of the integrity of the final cover system must be minimized through a design that accommodates settling and subsidence.
2. If closure of the CCR 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.

It is not proposed that the closure of the Reid/HMPL CCR impoundment will include removal of CCR material from the unit.

3. If closure of the CCR 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 Reid/HMPL CCR impoundment will be closed and covered with the CCR material in place. CCR material will be dewatered or drained as required to place soil cover material and the material will be compacted to meet the required permeability of not more than  $1 \times 10^{-5}$  centimeters/second (cm/sec). Appropriate soils testing will be conducted to document that the required thickness and permeability specifications have been met and may include laboratory and field testing procedures. The final cover will be vegetated with appropriate cover species and erosion of the final cover system must be minimized by the use of an erosion layer that contains a minimum of 6 inches of earthen material that is capable of sustaining native plant growth. The disruption of the integrity

of the final cover system must be minimized through a design that accommodates settling and subsidence.

4. An estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit.

Depth of impounded water and CCR is 16 feet and 39 feet (at respective locations of maximum impounded water and CCR depths). Elevation of impounded water and CCR is 426 feet and 440 feet, respectively, above mean sea level. These approximate depths and respective elevations are based on the most recent (December 2015) flight derived topographic contours and bathymetric survey data.

The remaining storage capacity is approximately 85,000 cubic yards (if CCR can be placed to the elevation of the current water surface). This volume was calculated based on the maximum allowable storage volume and the current volume of CCR stored in the facility based on the most recent bathymetric survey.

The approximate volume of impounded water and CCR is 767,000 cubic yards (approximate water volume is 85,000 cubic yards and approximate CCR volume is 682,000 cubic yards). This volume was calculated based on the maximum storage capacity, the current amount of CCR stored in the facility based on the most recent bathymetric survey, and the best available as-built data for the structure construction prior to placement of CCR.

5. An estimate of the largest area of the CCR unit ever requiring a final cover at any time during the CCR unit's active life.

The estimated largest area of the CCR unit ever requiring a final cover at any time during the CCR unit's active life is approximately 20 acres.

6. 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 surface impoundment 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 extensions sought under paragraph (f)(2) of this section.

The closure of the Reid/HMPL CCR impoundment will be implemented within any required timeframes per applicable environmental rules and regulations and in

consideration of any operational and financial constraints. The time required to complete closure is proposed not to exceed five years from commencing closure activities. Based on the current fill rate the impoundment has an estimated closure date of 2022.

### **Reid/HMPL CCR Impoundment Post-closure Plan**

The post-closure plan for the Reid/HMPL CCR impoundment includes, at a minimum:

1. The monitoring and maintenance activities will include maintaining the integrity and effectiveness of the final cover system, including making repairs to the final as necessary to correct the effects of settlement, subsidence, erosion, or other events, and preventing run-on and run-off from eroding or otherwise damaging the final cover;
2. The name, address, telephone number, and email address of the person or office to contact about the facility during the post-closure care period follows:

Thomas Shaw, Director Environmental  
Big Rivers Electric Corporation  
Address: 201 3rd Street Henderson, KY 42420  
Telephone Number: 270-844-6031  
Email Address: Thomas.Shaw@bigrivers.com

3. The planned uses of the property during the post-closure period will consist of maintaining the integrity of the power generating facility. Post-closure use of the property will not disturb the integrity of the final cover, liner(s), or any other component of the containment system, or the function of the monitoring systems unless necessary to comply with the requirements in the rule or other environmental regulations or to facilitate operating considerations that are allowed if the owner or operator of the CCR unit demonstrates that disturbance of the final cover, liner, or other component of the containment system, including any removal of CCR, will not increase the potential threat to human health or the environment. The demonstration must be certified by a qualified professional engineer.

### **Sources of Information**

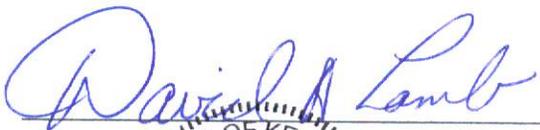
Geotechnical and other information provided by Associated Engineers, Inc.

Engineering design drawings and other information provided by Big Rivers Electric Corporation

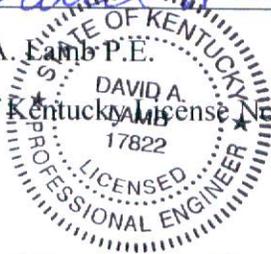
United States Geological Survey U.S. Geological Survey (USGS) 7.5 minute Robards and Delaware topographic quadrangle maps

**Professional Engineer Certification [Per 40 CFR § 257.102-104]  
Reid/HMPL CCR Impoundment Closure and Post-Closure Care Plan**

I hereby certify that myself or an agent under my review has prepared this Closure and Post-Closure Care Plan System Plan (Plan), and being familiar with the provisions of the final rule to regulate the disposal of coal combustion residuals (CCR) as solid waste under subtitle D of the Resource Conservation and Recovery Act (RCRA), attest that this Plan has been prepared in accordance with good engineering practices and meets the intent of 40 CFR Part 257.102-104. To the best of my knowledge and belief, the information contained in this Plan is true, complete, and accurate.



David A. Lamb P.E.  
State of Kentucky License No. 17822



Date: 10/11/16



 <p><b>ASSOCIATED ENGINEERS, INC.</b> ENGINEERS • GEOLOGISTS • SURVEYORS</p>	<b>BIG RIVERS ELECTRIC</b>		Job Number: 14-0146D
	<b>SEBREE GENERATING STATION: REID/HMPL CCR SURFACE IMPOUNDMENT</b>		Date: 1/05/2016
			Scale: AS SHOWN
			Drawn By: E.J.A.
<p> <small>           2740 North Main St. • Madisonville, KY 42431   1001 Fredonia St. • Owensboro, KY 42301            Phone: (270) 821-7752 • Fax: (270) 821-7789   Phone: (270) 684-8450 • Fax: (270) 684-9449            www.associatedengineers.com         </small> </p>			

Attachment A. Aerial Photo of the Reid/HMPL CCR Surface Impoundment

