

# SOUTH CAROLINA ELECTRIC & GAS



## CLOSURE PLAN

FOR THE  
**WATEREE STATION  
ASH POND**  
RICHLAND COUNTY, SOUTH CAROLINA

OCTOBER 2016



## 1 OVERVIEW

The EPA Administrator, Gina McCarthy, signed the Disposal of Coal Combustion Residuals from Electric Utilities final rule on December 19, 2014, and it was published in the Federal Register (FR) on April 17, 2015. The regulations provide a comprehensive set of requirements for the safe disposal of coal combustion residuals (CCRs), commonly known as coal ash, from coal-fired power plants. The rule will be 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.

South Carolina Electric & Gas (SCE&G) is subject to the CCR Rule. Based on SCE&G's review of the rule, the **Ash Pond** at **SCE&G Wateree Station** has been determined to be an existing CCR surface impoundment subject to the CCR rule requirements.

## 2 PURPOSE

The purpose of this report is to document that the Wateree Station Ash Pond Closure Plan (Written Closure Plan) meets the requirements of CCR rule §257.102 – *Written Closure Plan*.

## 3 APPLICABLE REGULATIONS

CCR rule §257.102 – *Written Closure Plan* states the following:

(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 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.

The closure of the Ash Pond is being accomplished through removal of CCR from the Ash Pond, therefore per (b)(1)(ii) as stated above, the closure plan shall provide a description of the procedures to remove the CCR and decontaminate the Ash Pond in accordance with 257.102 (c), which states:

(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.

#### **4 ASH POND DESCRIPTION**

Wateree Station is coal-fired electric generation plant located in Eastover, Richland County, South Carolina. The Ash Pond is an approximate 80-acre surface impoundment used for the management of sluiced fly and bottom ash material, as well as other low volume plant wastewaters.

Prior to promulgation of the CCR rule, a Closure Plan was prepared for the Ash Pond in 2013 which includes the excavation and removal of all CCR materials (2013 Closure Plan). The 2013 Closure Plan, entitled *Close Out Plan for the Wateree Station Ash Pond* dated January 2013, was approved by the South Carolina Department of Health and Environmental Control (SCDHEC) in February 2013 (LOA-004214). In preparation for closure activities, SCE&G has been excavating and removing CCR materials from the pond for the past several years. The closure of the Ash Pond is scheduled to begin in 2017 and be complete by the end of 2020.

#### **5 CLOSURE PLAN**

As discussed above, the 2013 Closure Plan was previously prepared and regulatorily approved for the closure of the Ash Pond. That Closure Plan includes the complete removal of the CCR material and select underlying soils. In preparation for closure activities, SCE&G has been excavating and removing CCR materials from the pond for the past several years.

A new document (Written Closure Plan) has been prepared for the purpose of demonstrating consistency and compliance with the requirements of the CCR rules. The Written Closure Plan highlights those excerpts, key findings, and plans from the 2013 Closure Plan required for compliance with CCR rule §257.102 . The Written Closure Plan is not intended to replace, amend or otherwise modify the planned closure plans and procedures presented in the 2013 Closure Plan, but rather is intended to present the key contents of the 2013 Closure Plan in a format consistent with the CCR rule requirements. A copy of the Written Closure Plan is presented in Attachment 1.

The attached Written Closure Plan includes a narrative description of how the Ash Pond will be closed, a description of the procedures to remove the CCR and decontaminate the Ash Pond, an estimate of the maximum inventory of CCR on-site, and a schedule for completing all activities necessary to satisfy the closure, in satisfaction of the requirements of §257.102 (b)(1) paragraphs (i), (ii), (iv) and (vi), respectively.

The requirements of paragraphs §257.102 (b)(1)(iii) and (v) are not applicable as they pertain to in-place closure.

## **6 CONCLUSION**

The attached Written Closure Plan, which presents pertinent content from the 2013 Closure Plan, demonstrates consistency and compliance with the CCR requirements. Based on the discussions above, the attached Wateree Station Ash Pond Closure Plan meets the requirements of CCR rule §257.102 – *Written Closure Plan*.

**ATTACHMENT 1**

**CLOSURE PLAN**

**SOUTH CAROLINA ELECTRIC & GAS**

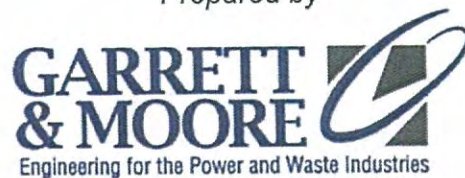


**WATEREE STATION  
ASH POND  
CLOSURE PLAN**

**RICHLAND COUNTY, SOUTH CAROLINA**

**OCTOBER 2016**

*Prepared by*



## 1. INTRODUCTION

Wateree Station is coal-fired electric generation plant located in Eastover, Richland County, South Carolina. The Ash Pond is an approximate 80-acre surface impoundment used for the management of sluiced fly and bottom ash material, as well as other low volume plant wastewaters.

Prior to promulgation of the CCR rule, a Closure Plan was prepared for the Ash Pond in 2013 which includes the excavation and removal of all coal combustion residual (CCR) materials (2013 Closure Plan). The 2013 Closure Plan, entitled *Close Out Plan for the Wateree Station Ash Pond* dated January 2013, was approved by the South Carolina Department of Health and Environmental Control (SCDHEC) in February 2013 (LOA-004214). In preparation for closure activities, SCE&G has been excavating and removing CCR materials from the Ash Pond for the past several years. The closure of the Ash Pond is scheduled to begin in 2017 and be complete by the end of 2020.

The closure of the Ash Pond is being accomplished through ongoing removal of CCR.

## 2 PURPOSE

The EPA Administrator signed the Disposal of Coal Combustion Residuals from Electric Utilities final rule on December 19, 2014, and it was published in the Federal Register (FR) on April 17, 2015. The regulations provide a comprehensive set of requirements for the safe disposal of coal combustion residuals (CCRs), commonly known as coal ash, from coal-fired power plants. The rule will be 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. South Carolina Electric & Gas (SCE&G) is subject to the CCR Rule. Based on SCE&G's review of the rule, the Ash Pond at SCE&G Wateree Station has been determined to be an existing CCR surface impoundment subject to the CCR rule requirements.

The purpose of this Plan is to present a closure plan for the Wateree Station Ash Pond that meets the requirements of CCR rule §257.102 – *Written Closure Plan*.

## 3 APPLICABLE CCR REGULATIONS

CCR rule §257.102 – *Written Closure Plan* states the following:

*(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 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.*

The closure of the Ash Pond is being accomplished through removal of CCR from the Ash Pond, therefore per (b)(1)(ii) as stated above, the closure plan shall provide a description of the procedures to remove the CCR and decontaminate the Ash Pond in accordance with 257.102 (c), which states:

*(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.*

#### **4 DESCRIPTION OF HOW THE CCR UNIT WILL BE CLOSED**

In preparation of closure plan development, a detailed subsurface investigation was performed to evaluate regional and site geology and hydrogeology conditions and characterize the Ash Pond. Discussion of the investigations is presented in the report *Close Out Plan for the Wateree Station Ash Pond 1* (2013).



The investigations were performed with primary objectives to, 1) delineate the extent and volume of CCR in the ash pond, and 2) investigate the potential impact from ash pond operations on the surrounding soils. The investigation included soil borings, including background borings and borings within the pond and along the pond perimeter, as well as laboratory analysis of samples of the coal ash and native soils to identify potential impacts on the surrounding soils.

Based on the analysis and interpretation of site data as presented in the *Close Out Plan for the Wateree Station Ash Pond 1* (2013), a closure scenario of the removal of all CCR materials as well as two feet from the underlying native soils was deemed appropriate. Comparing planned site actions to regional background levels, the planned removal of the ash and additional two feet of underlying soil from the ash pond will result in soil average arsenic concentrations at each of the sample locations within the ash ponds being less than the statewide average arsenic background soil/sediment concentration and within the range of background arsenic concentrations observed in Coastal Plain sediments.

The closure of the Ash Pond will be accomplished by the following:

- Excavation and Removal of CCR and Impacted Soil:
  - CCR in the Ash Pond will be excavated to the grades presented in the *Close Out Plan for the Wateree Station Ash Pond*, as also shown on the attached figure, as well as an additional two feet of excavation of residual soils beneath the CCR/residual soil interface.
  - Procedures for this task are discussed later in this plan.
- Wastewater Management:
  - Cease bottom and fly ash sluicing to the Ash Pond.
  - Construct a new composite lined wastewater pond to receive plant wastewaters and allow for ceasing of all flows to the Ash Pond.
- Dewatering:
  - Dewater to include the drawdown of water in the Ash Pond and dewatering of stormwater and groundwater inflow during the excavation of the pond.
- Management of Excavated CCR and Soil
  - Excavated CCR and soil from the pond to be disposed in the on-site Class Three landfill and/or at an off-site commercial Class Three landfill, or recycled.

## 5 PROCEDURES TO REMOVE THE CCR AND DECONTAMINATE THE CCR UNIT

CCR material in the Ash Pond will be excavated to remove all CCR material, as well as an additional two feet of excavation of residual soils beneath the ash/residual soil interface. The following operational sequence will be utilized:

- The contractor shall excavate and remove CCR to the grades presented in *Close Out Plan for the Wateree Station Ash Pond* (as also shown on the attached figure) as confirmed by 200' x 200' grid confirmation survey.

- The contractor shall notify the Owner's representative that planned excavation grades have been reached at each grid point. The Owner's representative will visually examine the excavation and confirm, if appropriate, that no visual CCR is present and CCR excavation for that area is complete.
- If CCR is not visually present at the planned excavation grade, then the excavation shall continue in order to remove the underlying 2 feet of native soils. A survey record for the bottom of excavation shall be maintained for inclusion in the as-built record.
- In the event that CCR is visually present at the planned excavation grade, then additional excavations will be necessary to remove any remaining CCR, as follows:
  - Additional excavations shall be performed until the CCR/residual soil interface is achieved.
  - The contractor shall survey the elevation of the CCR/residual soil interface.
  - The contractor shall excavate an additional 2 feet of underlying native soil, as confirmed by survey.
  - The survey records for the CCR/soil interface and bottom of excavation shall be maintained and included in an as-built record.

The excavated CCR and soil will either be disposed in the on-site Class Three landfill and/or at an off-site commercial Class Three landfill, or recycled.

There are no current end use plans for the Ash Pond area. Some backfilling of the Ash Pond may take place in order to prevent ponding and enable stormwater gravity drainage and discharge.

## **6 ESTIMATE OF MAXIMUM INVENTORY OF CCR ON-SITE OVER THE ACTIVE LIFE OF THE CCR UNIT**

The Ash Pond has ceased receiving fly ash and bottom ash, and CCR material has been being removed from the Ash Pond for recycling or landfill disposal for several years. In 2013, the volume of CCR in the Ash Pond was estimated at 2,150,000 cubic yards, which generally represents the maximum inventory of CCR over the life the Ash Pond. As of October 2016, the volume of CCR remaining in the Ash Pond is estimated to be 950,000 cubic yards.

## **7 SCHEDULE**

A schedule for the Ash Pond closure construction was presented in the 2013 *Close Out Plan for the Wateree Station Ash Pond*. The schedule included a timetable for the excavation and removal of all CCR material and planned underlying soil from the Ash Pond, as well as other permitting and construction actions necessary in support of the Ash Pond closure. Below presents a summary of the project schedule.

- Engineering/Permitting – By the end of 2015 (completed)
- Construction
  - Landfill Phase 2 – By the beginning of 2016 (completed)
  - New Wastewater Management Facility – By the end of June 2018 (anticipated by end of 2016)
  - Initial excavation and removal of CCR from the pond (ongoing)
- Ash Pond Closure
  - Cease all plant wastewater flows to the Pond - anticipated by end of 2016
  - Final excavation and removal of CCR from the pond:
    - Anticipated to start in 2017
    - To be complete by the end of 2020

Groundwater detection monitoring is currently ongoing pursuant to the requirements of CCR rule §257.94(b). The groundwater monitoring program shall continue in accordance with the requirements of the CCR rules (§257.90 - §257.98) until the requirements of §257.102 (c) are satisfied.



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**SCE&G - WATEREE STATION  
 ASH POND CLOSURE**

**BOTTOM OF ASH ELEVATION**

**FIGURE**