

Santee Cooper
Winyah Generating Station
Georgetown, SC

Winyah Ash Pond B
Closure Plan

October 9, 2019
Revision: 2

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I. Introduction

The United States Environmental Protection Agency (EPA) promulgated regulations regarding Coal Combustion Residuals (CCRs) which were published in the Federal Register on April 17, 2015 (40 CFR Part §257). One of the requirements (§257.102(b)(1)) was to prepare a written closure plan that describes 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 initial written closure plan was placed in the facility's operating record prior to October 17, 2016, as required by §257.102(b)(2). This report presents the amended written closure plan for the existing Ash Pond A at Winyah Generating Station in Georgetown, South Carolina. The plan was amended in 2019 to reflect on-going changes at Winyah Station and changes to the closure schedule.

Title 40 CFR §257.102(b)(1)(i) through (vi) specify the minimum required information that must be included in the written closure plan. Each requirement is stated below, along with the required information.

II. Narrative of Closure by Removal

Per §257 § 102(b)(1)(i) the closure plan must include: a *narrative description of how the CCR unit will be closed in accordance with this section.*

The existing Ash Pond B at Winyah Generating Station in Georgetown, South Carolina will be closed by removal of CCR. The CCRs will either be beneficially used or disposed of in an on-site Class 3 Landfill. The first cells of the Class 3 Landfill received a Permit to Operate November 2018. Most of these cells will be used for the closure of Ash Pond A. Additional cells will be constructed in the footprint of Ash Pond A to facilitate closure of Ash Pond B and the South Ash Pond. Winyah Station converted to dry bottom ash and fly ash handling in 2018 so ash is no longer sluiced to this pond. Additional station upgrades are in progress which will allow stormwater and wastewater inflows to be eliminated from Ash Pond B. Select areas of the footprint of Ash Pond B will be prepared for construction of landfill leachate and stormwater ponds to facilitate on-going ash pond closures. Other areas of Ash Pond B will be graded to drain to the on-site Industrial Cooling Pond.

III. Removal and Decontamination Procedures

Per §257.102(b)(1)(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.

Paragraph §257.102(c) states: 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.

The existing Ash Pond B contains both CCRs and wastewater. The CCR material is a mixture of fly ash and bottom ash. The wastewater and stormwater is conveyed to the Cooling Pond, where it is further treated prior to being discharged.

The procedure to remove the CCR and decontaminate the CCR unit in accordance with paragraph (c) above is described as follows:

1. All existing stormwater and wastewater streams currently pumped to the Ash Pond B will be re-routed to wastewater treatment system (pending), the Industrial Cooling Pond, or eliminated.
2. The Ash Pond B will be dewatered by pumping stormwater and wastewater for treatment to the Winyah Industrial Cooling Pond. Continual dewatering operations are anticipated throughout the duration of closure to minimize the amount of free water present within the CCR impoundment.
3. The CCRs will be dewatered further using stacking and gravity decanting as required to remove free water until the material can pass EPA Method 9095B (paint filter test). All CCR waste and contact soil hauled to the onsite Class Three Landfill must first pass this test. Material slated for beneficial use must also be dewatered.
4. CCRs will be excavated using conventional equipment (e.g. track hoes), screened as necessary to remove any organics, placed in off-road trucks, and hauled to (and compacted in) the onsite Class Three CCR Landfill. Material slated for beneficial use must also be dewatered. At this time based on current beneficial use activities, the need for installation of deep dewatering wells isn't required. Thus, the time frames for associated permitting and installation of deep dewatering wells are not included in this plan or schedule.
5. Beneficial use will continue concurrent with removal of CCRs to the landfill. Market demand or costs could impact beneficial use options. Beneficial use requires excavation using conventional equipment, screening to meet the

contract specifications, placement in off-road trucks for hauling to the on-site SEFA STAR facility or on-road trucks for hauling to other beneficial use options.

6. Groundwater monitoring will continue throughout the closure process following both a SC DHEC approved state program required under the station's NPDES permit and a CCR Rule groundwater monitoring plan.
7. Borings will be used to evaluate the bottom of the pond to create an excavation plan.
8. Post ash removal, visual analysis of the remaining soil, with testing, will be performed to verify complete removal of the CCR material. If results indicate removal of the CCRs is not complete, removal of a thin layer of subgrade soil may be required. Soil evaluation will be repeated until adequate removal of the CCR is verified. For soil results which indicate a di minimis of residual CCR material remains and/or do not fully achieve the standards specified by DHEC for "cleanliness" a deed restriction will be placed on the areas.
9. Erosion and sediment controls will be installed prior to breaching or removing the pond dikes to ensure all non-contact construction stormwater is controlled in a manner to prevent erosion and sedimentation in areas surrounding the pond.
10. Construction of phase 2 of the onsite Class Three CCR Landfill's leachate and stormwater ponds will begin within the footprint of Ash Pond B.
11. The areas of the pond not used for the Class 3 landfill or associated ponds will be graded as required to provide positive drainage to the industrial cooling pond and to allow for mowing and maintenance access and will be permanently seeded. If necessary, additional soil fill material will be imported to the site and compacted within the pond.
12. Groundwater monitoring will continue until concentrations of constituents within the groundwater do not exceed the groundwater protection standard established pursuant to §257.95(h) for constituents listed in appendix IV to this part.

IV. Maximum Inventory of CCR

Per §257.102(b)(1)(iv), the closure plan must include: *An estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit.*

The base grades of the pond were estimated based on historical information. In particular, Geosyntec relied on the data available on the pre-developed drawing set by Lockwood Greene prepared in 1972. The starting bottom surface used was

digitized from contours shown on Drawing CV-504 [Lockwood Greene, 1978]

Geosyntec performed investigations to support the geotechnical evaluation of the ponds. Although not specifically designed for this purpose, these investigations were used to estimate the transition between in-place CCR material and natural soils (i.e., the pond bottom). Three investigations were performed by Geosyntec, on February 2013, October 2013, and December 2013. In addition, Geosyntec reviewed the logs from borings drilled by Paul C. Rizzo and Associates (PCRA) in 1993 and again in 1999 to help us estimate the pond bottoms.

The pond bottom was used to estimate the amount of in-place material by subtracting it from the existing ground surface (topographic survey dated 06/29/2011 and revised 1/14/2012 by Thomas & Hutton). The on-site inventory was developed by the above mentioned means and reflect the amount of beneficial use of CCRs through the end of 2018.

Estimated Quantities and Types of CCR Materials – Ash Pond B

Type	Volume ¹ (cy)	Type of Materials
CCR	1,762,570 (2,115,084 tons)	Bottom ash, cenospheres, boiler slag, and fly ash

Note(s):

[1] Tons calculated assuming a density of approximately 1.2 tons/cy. Ash Pond A&B calculated as one pond and then halved between the two ponds.

V. Schedule for Closure by Removal

Per §257.102(b)(1)(vi), the closure plan must include: 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.

A project is currently underway to upgrade plant equipment that will allow for remaining stormwater and wastewater inflows to the Ash Pond B to cease in 2020. The Ash Pond B is

scheduled to begin closure by removal of CCR October 31, 2020. It is estimated that all closure activities will be completed in 2025 assuming no delays due to permitting, weather impacts on construction, excess dewatering requirements, or unforeseen equipment or manpower shortages. This also assumes an ongoing robust beneficial use market. The schedule for completing all activities required to close the Ash Pond B is shown as follows:

Final Closure Schedule - Ash Pond B

Activity	Estimated Completion Date
On-going beneficial use to reduce volume of CCR material	On-going now
Submit Closure & CCR Removal Verification Plan to DHEC	Jan 2020
SCDHEC Closure plan review / approval	Mar 2020
Final Receipt of waste / wastewater flows	Oct 2020
¹ Notification of intent to initiate closure	Oct 2020
Construct onsite Class Three Landfill - Area 2 (Cells 4 & 5)	Aug 2021 - Nov 2022
DHEC certifies operation	Dec 2022
Construct onsite Class Three Landfill - Area 2 (Cells 6 & 7)	Aug 2025 - Nov 2026
DHEC certifies operation	Dec 2026
Dewater CCR waste	Oct 2020 - Sep 2025
Remove CCR waste and dispose in Class Three Landfill	Oct 2020 - Sep 2025
State certifies CCR removal	Oct 2025
Grade and remove dikes	Post Closure 2025-2026
^{2,3} Notification of closure completion	Oct 2025

Notes:

- 1) Per §257.102(g), no later than the date the owner or operator initiates closure of a CCR unit, the owner or operator must prepare a notification of intent to close a CCR unit.
- 2) Per §257.102(f)(1)(ii), the owner or operator must complete closure of the CCR unit, for existing and new CCR surface impoundments and any lateral expansion of a CCR surface impoundment, within five years of commencing closure activities.
- 3) Per §257.102(h), within 30 days of completion of closure of the CCR unit, the owner or operator must prepare a notification of closure of a CCR unit

All dates are approximate and are provided to convey the overall sequence and scope of closure activities, and to demonstrate their approximate duration. Activities may commence and/or complete earlier or later than shown. The schedule is very aggressive considering the volume of CCR material with the end dates driven by regulatory requirements. The estimated initiation of closure by removal is in October 2020, with the estimated completion of closure by removal in 2025, barring no unforeseen delays.

Closure is complete when the elements of this Closure Plan, the SC DHEC approved Closure Plan, and the SC DHEC approved Verification Sampling Plan are complete as certified by a Professional Engineer licensed in the South Carolina. In accordance with 40 CFR §257.102(h), Santee Cooper will prepare a notification of closure of the Winyah Ash Pond B within 30 days of completion of closure and


place the notification in the operating record.

VI. CONCLUSIONS

This report satisfies the written closure plan requirements outlined in Title 40 CFR §257.102 for the Ash Pond B at Winyah Generating Station in Georgetown, South Carolina. The Ash Pond B will be closed by removing CCR material. Currently the pond remains in use to treat wastewater and contact stormwater. Closure by removal via continued beneficial use and disposal in an on-site Class 3 landfill cells is expected to commence October 2020 and be completed in late 2025. The on-site landfill cells will be constructed in the footprint of Ash Pond A.

VII. CERTIFICATION

I, Susan W. Jackson, being a registered Professional Engineer in the State of South Carolina, do hereby certify to the best of my knowledge, information, and belief that the information contained in this Winyah Ash Pond B Closure Plan dated September 5, 2019 was developed pursuant to the requirements of 40 CFR 257.102 and has been prepared with recognized and generally accepted good engineering practices.



Signature

Date 10-14-19

VIII. REFERENCES

Geosyntec (2014). Pond Bottom Estimate. Winyah Generating Station. Georgetown, South Carolina. Interoffice communication.

Lockwood-Greene, (1972), A Drawing Set for Santee Cooper Winyah Generating Station.

Thomas and Hutton (2011) Topographic Survey of a Portion of Santee Cooper Winyah

Generating Station. Revised 2012.

USEPA (2015). "40 CFR Parts 257: Hazardous and Solid Waste Management System;
Disposal of Coal Combustion Residuals from Electric Utilities," Federal Register,
Vol. 80, No. 74, April 2015.