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**SANTEE COOPER
CROSS GENERATING STATION**

Existing Class Two CCR Landfill Post-Closure Plan

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**CROSS GENERATING STATION
EXISTING CLASS TWO CCR LANDFILL POST-CLOSURE PLAN**

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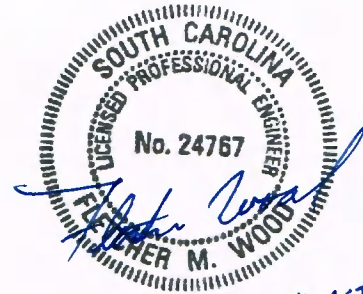
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**CROSS GENERATING STATION
EXISTING CLASS TWO CCR LANDFILL POST-CLOSURE PLAN**

CONTENTS

1.	INTRODUCTION.....	1
2.	DISCUSSION.....	2
3.	CONCLUSIONS.....	6
4.	CERTIFICATION.....	7





**CROSS GENERATING STATION
EXISTING CLASS TWO CCR LANDFILL POST-CLOSURE PLAN**

1. INTRODUCTION

The United States Environmental Protection Agency (EPA) promulgated new regulations regarding Coal Combustion Residuals (CCRs). These regulations (40 CFR Part 257) were published in the Federal Register on April 17, 2015. One of the requirements (§257.104) of the new regulations is to prepare a written post-closure plan that describes the minimum monitoring and maintenance activities and frequency at which these activities will be performed, contact information, and a description of the planned uses of the property during the post-closure period. This written closure plan must be placed in the facility's operating record no later than October 17, 2016, as required by §257.104(d)(2)(i).

This report presents the written post-closure plan for the existing Class Two CCR Landfill at Cross Generating Station in Pineville, South Carolina. This report also certifies that the planned end use of the final cover system (HDPE/GCL composite liner) of the Class 2 CCR Landfill as the bottom liner for future Class Three CCR Landfill cells will not increase the potential threat to human health and the environment.



**CROSS GENERATING STATION
EXISTING CLASS TWO CCR LANDFILL POST-CLOSURE PLAN**

2. DISCUSSION

Title 40 CFR §257.104(d)(1)(i) through (iii) specify the minimum required information that must be included in the written post-closure plan. Each requirement is stated below, followed by the specific closure plan information, in addition to any supplemental information that may be required. The written post-closure plan must include, at minimum, the following:

(§257.104(d)(1)(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. Paragraph (b) of this section (§257.104(b)) states that 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,

The Class Two CCR Landfill has undergone closure using two different types of final cover system, each with its own monitoring and maintenance considerations:

The north and south slopes of the landfill have been closed with a soil final cover system consisting of 18 inches of soil capable of supporting native vegetation overlying 24 inches of compacted low-permeability (no more than 10^{-5} cm/sec) soil. Additionally, there are three drainage terraces that convey stormwater runoff to the approximate midpoints of the north and south slopes. Each terrace midpoint contains two stormwater catch basins that collect stormwater and convey it to the base of the landfill by way of two 24" HDPE down drain pipes.

This final cover surface will be inspected for stressed vegetation, desiccation, erosion, subsidence, animal burrows, slope instability, and inadequate vegetative cover. If a defect in the final cover system is identified, an investigation to identify the potential cause of the damage will also be performed. Repairs will be made as soon as possible within seven days of detection to minimize further erosion.

When subsidence, erosion, or animal burrows are detected in the landfill final cover surface, the grades will be restored by backfilling and grading settled or low areas with soil. Any signs of instability, such as surface sloughing, bulging at the toe, tension cracks at the top of the slopes, or seepage from the side slopes, shall be reported to the engineer immediately for further evaluation and recommendations for remedial



**CROSS GENERATING STATION
EXISTING CLASS TWO CCR LANDFILL POST-CLOSURE PLAN**

measures. Disturbed areas and areas with inadequate vegetative cover will be re-seeded to restore vegetation for erosion control.

Mowing operations will be appropriately scheduled during the growing season. Other vegetative management operations will be performed as needed to establish and maintain a 75 percent or greater vegetative ground cover with no substantial bare spots. Undesirable vegetation such as trees and large shrubs shall be removed to minimize damage to the final cover surface. Vehicular traffic across vegetated areas of the landfill will be restricted to avoid potential damage to the capping system. Maintenance equipment, including lawn mowing equipment, will be allowed to operate on the vegetated areas only when necessary.

In addition to inspecting the terraces for stressed vegetation, desiccation, erosion, subsidence, animal burrows, slope instability, and inadequate vegetative cover, they also will be inspected to ensure drainage is not obstructed along the terraces, catch basin inlets are free-flowing, and down drain pipes are functioning properly.

The east and west slopes of the landfill, as well as the top deck of the landfill, have been closed with a composite liner final cover system consisting of an exposed 60 mil HDPE geomembrane overlying a geosynthetic clay liner (GCL). This final cover system also will serve a dual role as the base liner system for the Class Three CCR Landfill Area 1B and future Class Three CCR Landfill Area 1D, both of which will piggyback up the sides and over the top of the closed Class Two CCR Landfill. This exposed geomembrane system will be inspected for subsidence, animal burrows, and slope instability. Additionally, the interface between the exposed geomembrane final cover system and the soil final cover system near each corner of the landfill will be inspected to ensure the geomembrane remains properly anchored and free of damage from mowing equipment. This interface will be inspected where it crosses the drainage terraces to ensure these areas remain graded to drain along the terrace without eroding the soil cover or overtopping the terrace. Repairs related to erosion along the interface between the cover systems will be made as soon as possible within 7 days of detection to minimize further erosion. If a defect is severe and repairs cannot be implemented in a reasonable time period, interim measures will be taken to prevent the defect from getting worse. Any defect observed in the exposed geomembrane must be properly repaired by a qualified geomembrane installer and recorded for inclusion in the certification report for the future overlying Class Three landfill area. Vehicle traffic will not be allowed on the exposed geomembrane final cover system.

During the post-closure care period, the Class 2 CCR Landfill will be inspected semi-annually in order to identify defects that may compromise the integrity of the final cover



**CROSS GENERATING STATION
EXISTING CLASS TWO CCR LANDFILL POST-CLOSURE PLAN**

system. These inspections will include a walk of the entire site to look for evidence of settlement/subsidence, slope instability, animal burrows, exposed waste, erosion of final surface cover, ponding of water on the final cover system, and any seepage from the side slopes. The groundwater monitoring wells will be inspected for damage. The access roads and ramps will be inspected. Stormwater facilities will be inspected for accumulations of sediment or debris that might prevent proper system operation. Excess sediment or debris will be removed as required so that the system maintains proper operation. Any other maintenance or repairs required to correct a deficiency will be documented and performed on an as-needed basis.

As previously noted, the north and south drainage terraces and their corresponding downdrains will become integrated with the operation of the future Class Three CCR Landfill Area 1B and 1D cells once these cells begin phased closure. When closure is complete for a given bench, these stormwater facilities will be included in the routine weekly and annual inspections performed on the operating Class 3 CCR landfill areas in accordance with §257.84. Additionally, these facilities will be inspected prior to (when possible) and following all extreme weather events to ensure the drainage system is functioning properly.

(2) If the CCR unit is subject to the design criteria under §257.70, maintaining the integrity and effectiveness of the leachate collection and removal system and operating the leachate collection and removal system in accordance with the requirements of §257.70; and

The existing Class Two CCR Landfill is an existing landfill with no leachate collection system, and therefore not subject to the design criteria under §257.70.

(3) Maintaining the groundwater monitoring system and monitoring the groundwater in accordance with the requirements of §257.90 through §257.98.

The monitoring and maintenance activities associated with the groundwater monitoring system will be described in detail in the groundwater monitoring program to be developed in accordance with §257.90 through §257.98. Groundwater will be monitored in accordance with the requirements of §257.90 through §257.98 throughout the duration of the post-closure care period.



**CROSS GENERATING STATION
EXISTING CLASS TWO CCR LANDFILL POST-CLOSURE PLAN**

(§257.104(d)(1)(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*

Facility contact information during the post-closure care period is as follows:

South Carolina Public Service Authority
Class Two Landfill Cross Generating Station
One Riverwood Drive
P.O. Box 2946101
Moncks Corner, SC 29461

Attn: Mr. Don Cribb
Manager Generating Station
843-761-8000
donald.cribb@santecooper.com

(§257.104(d)(1)(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.*

Operating Class Three CCR Landfill Area 1B and future Class Three CCR Landfill Area 1D will piggyback up the east and west slopes, and eventually over the top of, the existing Class Two CCR Landfill. The planned use of the facility both during and after the post-closure period includes integration with the Class Three landfill. This use will not disturb the integrity of the final cover, which has been designed both for exposure during the interim period as well as long-term use as a future Class Three base liner system, or any other component of the containment system, or the function of the monitoring systems. The drainage terraces on the Class Two landfill are designed to receive stormwater runoff from the closed drainage terraces of the Class Three landfill, as the landfill is built and closed in phases. This planned use will not disrupt the integrity of the existing drainage system.

(§257.104(d)(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.*

See Section 4.



**CROSS GENERATING STATION
EXISTING CLASS TWO CCR LANDFILL POST-CLOSURE PLAN**

3. CONCLUSIONS

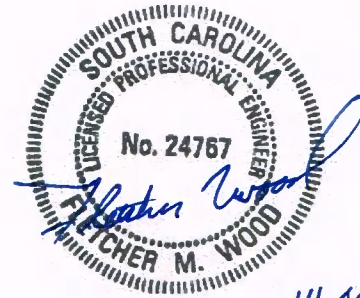
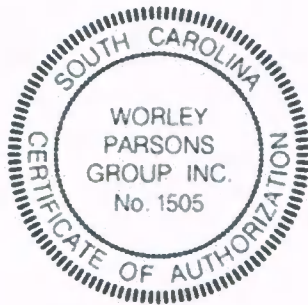
This post-closure plan for the existing Class Two CCR Landfill at Cross Generating Station satisfies the post-closure care requirements outlined in Title 40 CFR §257.104. The planned end use of the final cover system (HDPE/GCL composite liner) of the Class 2 CCR Landfill as the bottom liner for future Class Three CCR Landfill cells will not increase the potential threat to human health and the environment.



**CROSS GENERATING STATION
EXISTING CLASS TWO CCR LANDFILL POST-CLOSURE PLAN**

4. CERTIFICATION

I, the undersigned Professional Engineer registered in good standing in the State of South Carolina, do hereby certify under penalty of law that I have personally examined and am familiar with the information submitted in this demonstration, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. I certify, for the above-referenced CCR unit, that the post-closure plan meets the requirements of Title 40 CFR §257.104, and that the planned end use of the of the final cover system (HDPE/GCL composite liner) of the Class 2 CCR Landfill as the bottom liner for future Class 3 CCR landfill cells will not increase the potential threat to human health or the environment.



14-OCT-2016

Fletcher Wood

Printed Name of Professional Engineer

Fletcher Wood

Signature of Professional Engineer

24767

South Carolina License #