Prepared for

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CONCEPTUAL CLOSURE PLAN
UNIT 2 SLURRY POND AND WEST ASH POND
WINYAH GENERATING STATION
GEORGETOWN, SOUTH CAROLINA

Prepared by

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Project Number: GSC5242

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TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

LIST OF DRAWINGS

LIST OF FIGURES

LIST OF ATTACHMENTS

Geosyntec consultants

LIST OF ACRONYMS

BMP	Best Management Practices
BOW	Bureau of Water
CCR	Coal Combustion Residuals
CGS	Cross Generating Station
CY	Cubic Yards
DHEC	South Carolina Department of Health and Environmental Control
EQC	Environmental Quality Control
MSL	Mean Sea Level
NPDES	National Pollutant Discharge Elimination System
SWPPP	Stormwater Pollution Prevention Plan
WGS	Winyah Generating Station
WWTS	Wastewater Treatment System

1. INTRODUCTION

1.1 Site Background

The Winyah Generating Station (WGS or the Site) is an electric generating facility owned and operated by Santee Cooper. WGS is located between Pennyroyal and Turkey Creeks, tributaries to the Sampit River, and is about four miles southwest of Georgetown, South Carolina, as shown on **Drawing 1**. As part of the Site's Waste Water Treatment System (WWTS), there are seven wastewater treatment impoundments which are permitted and operated under National Pollutant Discharge Elimination System (NPDES) Permit No. SC0022471. The impoundments are designated for treatment of coal combustion residuals (CCRs), industrial wastewater, and/or stormwater. Characteristics of these ponds are summarized below and the locations are shown in **Figure 1** and **Drawing 2**.

Pond Name	Year Constructed Completed	Approximate Size (Acres)**
Slurry Pond 3&4	1979	106 (100)
West Ash Pond	1980	64 (62)
South Ash Pond	1980	75 (61)
Ash Pond A	1975	90 (88)
Ash Pond B	1975	65 (63)
Unit 2 Slurry Pond	1976	32 (34)
Cooling Pond	1976	411

****Note the acreages in parentheses were reported in the EPA reports.**

1.2 Purpose and Scope of Plan

Two impoundments at the Site will no longer receive waste in order to remove CCR from these two ponds for beneficial use. The purpose of this Closure Plan (Plan) is to provide conceptual-level interim and final plans to describe the proposed closure process for the Unit 2 Slurry Pond and West Ash Pond. These ponds will no longer receive waste and will be closed. Excavation of CCR materials from the Unit 2 Slurry Pond is currently underway and the CCR is being beneficially used for the closure of

the Class 2 landfill at the Cross Generating Station (CGS). The flue gas desulfurization slurry material in the Unit 2 Slurry Pond was not dry wall quality gypsum so it was not appropriate for beneficial use in gypsum markets. Santee Cooper plans to beneficially use ash from the West Ash Pond at the onsite SEFA STAR facility and potentially for other beneficial uses.

This Plan relies upon information obtained from previous investigations at the Site, which are relevant to the proposed closure methods.

1.3 Plan Organization

The remainder of this Plan is organized as follows:

- The regulatory framework for closure of the WGS CCR ponds is presented in Section 2;
- Site characteristics relevant for the proposed closure, including Site surface conditions, hydrology, hydrogeology, and subsurface conditions are summarized in Section 3;
- Details of the conceptual closure Plan are presented in Section 4;
- Future submittals are presented in Section 5;
- Summary of the Plan is included in Section 6; and,
- References are provided in Section 7.

A NPDES construction permit with an amended NPDES flow diagram describing flow rerouting necessary to facilitate closure is being submitted to the South Carolina Department of Health and Environmental Control (DHEC) Bureau of Water concurrently with this conceptual closure plan or shortly thereafter.

2. REGULATORY FRAMEWORK

2.1 Overview

Discharges at WGS are currently regulated as either wastewater or stormwater under various permits and regulatory programs, as discussed below. The CCR ponds and water discharges from the CCR ponds are part of the WWTS. As such, the closure of these ponds is subject to the provisions of:

(i.) Industrial Wastewater Permit for Discharge to Surface Waters, Permit No. SC0022471, issued under the NPDES program and the South Carolina Pollution Control Act and administered by DHEC through Regulation 61-9, Water Pollution Control Permits (herein referred to as the "Industrial Wastewater Permit");

(ii.) DHEC Regulation 61-67, Standards for Wastewater Facility Construction;

(iii.) DHEC Regulation 61-82, Proper Closeout of Wastewater Treatment Facilities; and,

(iv.) DHEC-published guidance entitled "Closeout of Wastewater Treatment Systems" dated October 2009.

Stormwater discharges from industrial activities not discharging to wastewater outfalls are subject to the conditions of the NPDES General Permit for Storm Water Discharges Associated with Industrial Activities, Permit No. SCR000000 (herein referred to as the "Industrial Stormwater Permit").

WGS will continue to comply with applicable requirements of these permits and regulations throughout the proposed closure process. This Plan is not intended to present or propose specific wastewater management plans or system/permit modifications. The following sections provide a discussion of applicable regulations, DHEC guidance, and permits. Construction stormwater permitting will be considered in future submittals. This Plan describes proposed pond closures under the wastewater permit due for renewal by DHEC.

2.2 Industrial Wastewater Permit

There are two permitted outfalls for industrial wastewater at the Site. Both permitted discharges are from the Cooling Pond. Outfall 001 discharges by gravity (via an emergency spillway or drawdown structure) to Turkey Creek from the north end of the Cooling Pond. At Outfall 002, water is pumped from the southeastern edge of the Cooling Pond to the North Santee River (see **Drawing 2**). Runoff from the impoundments scheduled for closure will continue to drain to the Cooling Pond. Additional detail will be provided in the NPDES Permit Modification Application submittal listed in **Section 5.0**.

Requirements of the permit include (but are not limited to): effluent limitations and monitoring (including whole effluent toxicity); discharge flow monitoring; groundwater monitoring; recordkeeping and reporting; implementation of a Best Management Practices (BMP) Plan; coal ash basin integrity inspections; and maintaining an Operations and Maintenance Manual for the waste treatment facilities (DHEC, 2008). A Stormwater Pollution Prevention Plan (SWPPP) for stormwater will be incorporated as part of the station BMP Plan.

During the first six months following installation of the temporary cover on the West Ash Pond, Santee Cooper will monitor the effluent from Outfalls 001 and 002 to evaluate if there are changes in effluent quality and/or quantity that could be attributed to the operation of the closure of the West Ash Pond. A report to the Director of the Water Facilities Permitting Division will be submitted within 30 days of this evaluation period to summarize this evaluation.

2.3 DHEC Regulation 61-67

DHEC Regulation 61-67 establishes standards for general and technical requirements for the design and construction of wastewater treatment facilities and wastewater collection and transmission facilities. This regulation focuses primarily on the design criteria and submittals (i.e., Engineering Reports) to obtain a Construction Permit for these facilities. Construction Permit criteria for wastewater treatment facilities are provided in 61-67.300.F; 61-67.300.F.17 discusses closure requirements. Specifically, 61-67.300.F.17 states that "all wastewater treatment facilities shall be closed out within 180 days in accordance with applicable regulations, when the facility is closed or the effluent disposal permit [i.e., Industrial Wastewater Permit] is inactivated, terminated or

revoked, unless determined by DHEC that a greater time is necessary." Additionally, a closure plan must be approved by DHEC as a prerequisite to closure.

This Plan acts as the conceptual-level closure plan for DHEC approval. Activities to remove ash from the ash pond are anticipated to be staged and occur over an extended period to time to facilitate beneficial use. Final closure will occur over fifteen (15) years after the plan is approved. The amount of CCR beneficially used will be based on the volume of ash available and the anticipated market demand. Material not beneficially used by the closure date will be landfilled in a Class 3 landfill, to be permitted and constructed at WGS or another Class 3 landfill. Santee Cooper intends to apply for a permit to construct Class 3 landfill cells at Winyah. The Industrial Wastewater Permit will remain active throughout the closure period. The description of the applicable regulations for the closure process is provided below.

2.4 DHEC Regulation 61-82

DHEC Regulation 61-82 provides procedures for the proper closure of wastewater treatment facilities. For waste treatment facilities that are not defined as lagoons or package plants (e.g., ash ponds), Section IV states that these facilities shall be closed out in accordance with guidelines issued by DHEC on an individual basis. The closure guidelines shall be designed to prevent health hazards and promote safety in and around the Site.

The procedures applicable to all closures include:

(i) request for DHEC pre-closure inspection;

(ii) pre-closure site inspection conducted and DHEC authorization to proceed with closure;

(iii) closure activities and monitoring deemed necessary by DHEC to prevent water quality violations or nuisance conditions established on a case-by-case basis;

(iv) request for DHEC post-closure inspection; and,

(v) written closure completion approval from DHEC.

Further detail regarding these procedures is provided below.

2.5 DHEC Wastewater Treatment Systems Closure Guidance

DHEC Bureau of Water (BOW) provided further guidance on the closure of wastewater treatment systems in a document entitled "Closeout of Wastewater Treatment Systems," published in October 2009 ("the Guidance"). This document sets out the specific details regarding the closure application, review and approval process, including the requirements of the closure plan submittal package.

These requirements were reviewed in preparation of this Plan. The DHEC BOW, Water Facilities Permitting Division, Industrial Wastewater Permitting Section handles closure plans on wastewater treatment systems for industrial facilities. The Industrial Wastewater Permitting Section is expected to involve other program areas of DHEC as appropriate, such as the Groundwater Management Section, Environmental Quality Control (EQC) regional office, and/or Bureau of Land and Waste Management. However, Site personnel may contact these other program areas as appropriate to facilitate the application review process.

In accordance with the Guidance, three (3) copies of the submittal package will be provided; each copy will include the following:

- A transmittal letter outlining the submittal package;
- A copy of this Plan including separate, completed DHEC Form 1795 "Industrial Wastewater Facility Closure Forms" for the Unit 2 Slurry Pond and West Ash Pond (located in **Attachments 1 and 2,** respectively); and,
    - **Figure 1** includes the aerial photograph outlined in Section 20 of DHEC Form 1795.
    - **Figure 2** includes a United States Geological Service Map showing the property line, at least one mile beyond the property boundaries, a ¼ mile buffer surrounding the property line, and the location of drinking water wells as outlined in Sections 18 of DHEC Form 1795.
    - **Figure 2** of the Groundwater Monitoring Plan outlines the groundwater monitoring wells discussed in Section 18 of DHEC Form 1795**.**

- **Drawing 2** includes the topographic map and facility information outlined in Sections 18 and 19, respectively, of DHEC Form 1795.

- A groundwater monitoring plan (located in **Attachment 3**).

Upon approval of this Plan, pond closure activities may be implemented. As described above, when closure activities are complete, the Site owner must send a letter to the EQC regional office indicating such and the regional office will conduct a post-closure inspection. If the closure is acceptable, DHEC will provide written closure completion approval.

2.6 Stormwater

Stormwater discharges from the Site are covered by the Industrial Wastewater Permit and the Industrial Stormwater Permit. Requirements of the Industrial Stormwater Permit include (but are not limited to) preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP); implementation of control measures to minimize pollutants in stormwater discharge; monitoring; inspections; and reporting and recordkeeping (DHEC, 2011). The Site currently does and will continue to comply with the Industrial Stormwater Permit including the requirements to maintain an up-to-date SWPPP throughout the pond closure process and until all steam-electric generating facilities are removed.

3. SITE CHARACTERISTICS

3.1 Overview

Section 3 summarizes site characteristics, including topography, hydrology, hydrogeology, and subsurface conditions, that are relevant for the proposed pond closures. Site specific information is based upon a review of historical site information, previous site investigations (S&ME 1978; PCRA 1999), recent geotechnical investigations by Geosyntec, routine groundwater monitoring program reporting, and published regional information.

3.2 Surface Conditions

CCR quantity estimates and other values used to describe ponds are included in this section. These values are based on the most recent information available and may vary from previously reported values.

3.2.1 Unit 2 Slurry Pond Area

The Unit 2 Slurry Pond is located in the northeast portion of the site and has a surface area of approximately 32 acres. The unlined pond was commissioned in 1977 with an engineered perimeter dike approximately 8 to 15 feet high from the outside toe. The upstream and downstream slope of the perimeter dikes is approximately 2H:1V (Horizontal:Vertical). A divider dike is located in the center of the pond along an approximate north-south axis. Based on a review of design drawings for the pond (Lockwood Green, 1976), the estimated elevation of the bottom of CCR is +24 feet MSL. More recent borings indicate minimum and maximum CCR elevations of approximately +20 and +36 feet MSL, respectively (see **Drawing 2**). The estimated total volume of CCR materials in the pond was approximately 344,000 cubic yards (CY) with an average CCR depth of approximately 7 feet.

Unit 2 Slurry Pond has been maintained dry since prior to 2000 using ditches to route surface water to a pump station and periodic pumping to remove any accumulated water. The pump station is located in the southwest corner of the Pond and discharges to Ash Pond A.

3.2.2 West Ash Pond Area

The West Ash Pond is located in the western portion of the site, south of Slurry Pond 3&4 and northwest of the South Ash Pond. The West Ash Pond has a surface area of approximately 64 acres and was commissioned in 1980. This pond is unlined and designated to contain fly ash, bottom ash, and boiler slag. The estimated volume of CCR materials in the pond is 2,130,000 CY.

The West Ash pond is surrounded on the south, west, and east by an engineered perimeter dike that is approximately 15 to 30 feet high from the outside toe (see **Drawing 2**). The upstream and downstream slope of the perimeter dikes ranges from approximately 2H:1V to 3H:1V. The north side of the West Ash Pond is bounded by a divider dike that separates it from the Unit 3&4 Slurry Pond. The current elevation of the CCR surface within the pond ranges from approximately +24 to +40 feet MSL, with an average CCR depth of approximately 22 feet.

The West Ash Pond currently holds little free-standing water, mainly concentrated within surface water routing ditches. Stormwater is currently conveyed in perimeter ditches along the west and south edges to the southeast corner where it is collected in a sump near an intake structure and pumped to the South Ash Pond. There is currently no gravity flow outlet from the West Ash Pond. Stormwater runoff from the west half of the coal pile is currently pumped to the southeast corner of the West Ash Pond. The West Ash Pond only receives industrial wastewater. Wet sluicing of CCR was terminated prior to 2010.

3.3 Site Hydrology

The Sampit River is located approximately two miles north of the WGS. It flows in an easterly direction and discharges into Winyah Bay. The river is influenced by the bay tides at least as far inland as Pennyroyal Creek. Pennyroyal Creek is a tributary to the Sampit River. It borders the western boundary of the plant property and flows in a northeasterly direction. Another tributary, Turkey Creek, located north and east of the station, flows north and joins Pennyroyal Creek about one mile north of the WGS property line and one-half mile south of the confluence with the Sampit River. When

the Cooling Pond was initially constructed, a portion of Turkey Creek was relocated to a man-made channel along the east side of the Cooling Pond.

3.4 Site Hydrogeology

Generally, the site hydrogeologic conditions consist of an unconfined surficial aquifer consisting of mixtures of predominantly sand and minor amounts of silt and clay. The surficial aquifer at the site also includes the permeable portion of the Gordon Aquifer, which is represented by the cemented and non-cemented Chicora Member of the Williamsburg Formation. The Chicora overlies the low permeability dense clays of the Williamsburg Formation (see **Section 3.5**) and is sporadic at the Site; however, the dense clays of the Williamsburg Formation are continuous and extend to a minimum elevation of at least -60 feet on the National Geodetic Vertical Datum of 1929. Groundwater flow within the surficial aquifer and Gordon Aquifer is dictated by the onsite ponds and regional topography and is generally toward Pennyroyal and Turkey Creeks.

3.5 Subsurface Conditions

This section presents a summary of subsurface conditions in the pond areas. Information from various site exploration reports indicates that the near surface soils primarily consist of four general strata. A brief description of each stratum is presented as follows:

- CCR: The CCR material is located approximately at elevations ranging from +10 to +44 feet MSL.

- Fill Soil: Fill soil is typically re-worked on-site Pleistocene soil and is present in varying thicknesses within the pond areas, including within the engineered dikes. The dike fill generally consists of loose to medium dense silty/clayey sands, and stiff sandy clays to low to medium plastic clays.

- Foundation Soil: Beneath the ash and fill soil, unconsolidated Pleistocene-aged sediments are present. This layer ranges in thickness from approximately 30 to 40 feet and generally consists of sands interbedded with thin clay seams. The lower approximately 5 to 10 feet of this layer consists of a partially cemented, sandy, very hard coquina (shell) layer.

- Williamsburg Formation: The Tertiary Williamsburg Formation (also referred to as the Black Mingo Formation) is present below the coquina layer and is described as dense, low-permeability, gray calcareous clay containing trace sands.

3.6 CCR

Recent geotechnical investigations included explorations within the CCR material contained in the ponds designated for closure. The CCR impounded within the West Ash Pond consist of fly ash and bottom ash from coal combustion settled out of industrial wastewater. The Unit 2 Slurry contains residual solids from the wet Flue Gas Desulfurization scrubbers.

4. CONCEPTUAL CLOSURE PLAN

4.1 Closure Overview

As previously discussed, ongoing CCR disposal in two of the existing CCR ponds at the WGS was discontinued. Ongoing wastewaster disposal will be discontinued as these two ponds are transitioned to an active closure process. The proposed closure for the two ponds includes excavation and removal of CCR materials for beneficial use. Groundwater monitoring will be performed in accordance with the DHEC-approved groundwater monitoring plan throughout the closure period.

4.1.1 Unit 2 Slurry Pond Closure

Excavation of materials from the Unit 2 Slurry Pond is underway and anticipated to be completed by early 2016. The excavated CCR material from the Unit 2 Slurry Pond is being beneficially used for closure of the CGS Class 2 landfill per DHEC-approval based on characterization of the waste as appropriate for disposal in a Class 2 landfill. In addition to CCR excavation, the existing berms and pond area will be regraded to promote stormwater runoff as sheet flow toward the Cooling Pond Intake Canal. In general, closure of the Unit 2 Slurry Pond will include the following steps:

- Complete excavation and removal of CCR materials to facilitate closure of the CGS landfill per DHEC-approval; and

- Regrading of existing berms and pond area for future site industrial use.

During the interim closure period, perimeter and intermediate dike roads and the roadways leading to and from the Unit 2 Slurry Pond must be kept in service to allow for truck access for CCR removal. The Unit 2 Slurry Pond will be graded to gravity drain to the southeast corner of the pond. A culvert or set of culverts will be installed in the intermediate dike to gravity drain the west cell to the east cell. Another culvert or set of culverts will be installed through the perimeter dike near the southeast corner of the pond to gravity drain to the Cooling Pond Intake Canal. CCR excavation will proceed from the outer extents of the pond so rim ditches can be graded at the outer extent. Rim ditches will ultimately drain to the culvert at the southeast corner. As CCR is removed from the pond from the outer extents toward the interior, verification sampling will be performed to ensure complete CCR removal as stipulated by DHEC. Clean fill will be placed in phases following removal of CCR material in portions of the

pond to allow for gravity drainage from the pond. Clean fill placement will not be initiated until confirmatory sampling is completed and approved by DHEC.

4.1.2 West Ash Pond Closure

Excavated CCR material from the West Ash Pond (estimated to be 2,130,000 CY) will be beneficially used. Due to the nature of potential beneficial use opportunities, the rate of excavation of existing CCR material from this pond will be dictated by the processing capacity of the beneficial use facility as well as by market demand for the product. The closure of the West Ash Pond is anticipated to have a duration of fifteen (15) years. All of the CCR excavated will either be destined for beneficial use or disposed in a Class 3 on-site landfill or another Class 3 landfill.

Because of the potential extended time frame for closure of this pond, several intermediate steps will be incorporated into the closure process. After removal of surficial liquids, the CCR surface will be regraded to promote gravity stormwater drainage during interim closure conditions. After completion of CCR regrading, an interim cover will be constructed to limit surface water infiltration into the underlying CCR material.

In general, closure of the West Ash Pond will include the following steps:

- Removing free water from above the natural ground surface;
- Regrading CCR to stabilize it and promote stormwater drainage during the phased closure period;
- Constructing a temporary cover to minimize infiltration of rainwater into the CCR material and enhance stabilization;
- Excavating, mixing, screening, and removing CCR for beneficial use; and
- Regrading existing berms for future site industrial use.

These components of the proposed pond closure are described in further detail in the following sections.

4.2 Dewatering

Dewatering of the ponds means removing free water from above the natural ground surface and requires modifying the existing drainage and wastewater management infrastructure. Discharges of stormwater and industrial wastewater will be in accordance with the Site's NPDES permits throughout all phases of closure.

Currently in the Unit 2 Slurry Pond, liquids gravity drain to the southwest corner of the pond where they are intermittently pumped from a pumping station to Ash Pond A. As part of the closure process, portions of the existing perimeter dikes surrounding the Unit 2 Slurry Pond will be removed to foundation grades or lowered to promote gravity surface water drainage.

Modifications to the existing water management systems in the West Ash Pond are required to facilitate dewatering, provide gravity drainage from the ponds, and prevent liquid impoundment throughout the phased closure. More detailed design drawings for the drainage system improvements will be submitted in the future under separate cover (see **Section 5.0**). The drainage systems will be designed to handle flows from the 25-year 24 hour storm event, or as required by the DHEC BOW. The following discussions present conceptual drainage system modifications for this pond.

The West Ash Pond is hydraulically connected to Slurry Pond 3&4 through a series of culverts and a spillway near the west end of the divider dike between these two ponds. These culverts will be lowered to an invert elevation of approximately 33 feet MSL and the slopes reversed to allow for gravity drainage of liquids from the West Ash Pond to Slurry Pond 3&4. This modification is consistent with the previously approved Unit 3&4 Slurry Pond drawdown project. This project has lowered the water surface in Slurry Pond 3&4 to less than 26 feet MSL and driving head between the two ponds is now toward Slurry Pond 3&4. Moreover, to provide operational flexibility during interim CCR removal, additional culvert pipes and/or spillways will be installed as needed along the divider dike that separates the West Ash Pond from Slurry Pond 3&4. Interim grading of the CCR will include a system of rim and finger drains that transmit surface water toward the intermediate dike culverts and/or spillways and Slurry Pond 3&4 (see **Section 4.3**). Initiation of the West Ash Pond Closure is not anticipated to affect the implementation and/or operation of the previously approved and implemented drawdown project which mitigates the risk of seismic liquefaction in the West Ash Pond and the Unit 3&4 Slurry Pond.

4.3 Intermediate Regrading

As free liquids within the dike areas are removed, the existing CCR within the West Ash Pond will be graded to stabilize the material and promote surface water drainage to stormwater outlets. The West Ash Pond will be graded with a system of rim and finger ditches towards Slurry Pond 3&4. CCR from other on-site CCR ponds (South Ash Pond, Ash Pond A, and/or Ash Pond B) may be utilized to meet interim design grades, if necessary. **Drawing 3** presents example interim cover surfaces for the West Ash Pond and interim grading, drainage, and excavation area plans for the Unit 2 Slurry Pond.

4.4 Temporary Cover

A temporary cover will be constructed over the West Ash Pond after the CCR has been dewatered, regraded, and stabilized. The temporary cover will extend to the limits of the CCR where it will be anchored in place in the perimeter and divider dikes. The temporary cover will consist of seamed geomembrane panels, composed of material such as skrim-reinforced polyethylene or similar. Detailed design of the temporary cover will be provided as a separate design package (see **Section 5**).

4.5 CCR Excavation and Beneficial Use

As discussed above, CCR excavation in the Unit 2 Slurry Pond is ongoing with the excavated CCR materials being transported to the CGS landfill for beneficial use in the closure of the CGS Class 2 landfill.

CCR excavation in the West Ash Pond will be phased with rates of excavation dependent on beneficial use facility production capacity as well as market demand for the product. Excavation phases will likely range in size from 1 to 10 acres; actual phase size will be dependent upon forecasted rates of CCR excavation. Prior to the excavation in a phase, the temporary cover system will be removed and the remaining leading edge of the temporary cover system will be re-anchored. All of the CCR excavated will be beneficially used or disposed in a Class 3 on-site landfill or another Class 3 landfill if the material is not able to be beneficially used by the closure date.

During the CCR excavation process, rim and finger ditches will be maintained in the exposed CCR to manage water during CCR excavation. After the dry materials have been excavated, the ditches will be deepened to continue to dewater the CCR. Once these steps are accomplished, another layer of materials will be excavated. This method will be repeated as needed until the materials have been removed. Water which has been in contact with ash will be collected and handled as industrial wastewater in accordance with the Site's NPDES Industrial Wastewater Permit.

Closure activities may be performed concurrently in more than one phase. For example, excavation and staging of wet materials may occur in one phase while excavation and loading of dry materials may occur simultaneously in another phase. Additionally, in an effort to maximize beneficial use opportunities, CCR from different locations within the CCR pond may be blended together in order to achieve a homogenous product capable of meeting end-use specifications. Material not meeting the requirements for beneficial use will be disposed of in a Class 3 on-site landfill. Verification sampling will be performed to ensure complete CCR removal as stipulated by DHEC.

Upon completion of CCR excavation, the limits of excavation will be surveyed and documented on record drawings showing the limits of excavation. The surveys will be performed by a surveyor licensed in South Carolina using methods appropriate for this type of work.

4.6 Long Term Land Use

Upon completion of the CCR removal operations, the existing berms will be removed and the footprint of the pond area will be graded to generally meet pre-development site conditions or will be incorporated into long term site development in accordance with site permits. **Drawing 4** presents the pre-development option for these ponds. Clean fill will be placed following removal of CCR material in portions of the pond to allow for gravity drainage. Adding clean fill will not be initiated until confirmatory sampling is completed and approved by DHEC.

The clean closed areas will be monitored in accordance with the Site's approved monitoring plans and will operate to comply with the Site's Industrial Stormwater Permit requirements including effluent limitations and monitoring. A copy of the Site's

current groundwater monitoring plan is provided in **Attachment 3** of this Plan. The groundwater monitoring plan will be updated as needed.

5. FUTURE SUBMITTALS

This Plan presents conceptual-level interim and final closure plans for the Unit 2 Slurry Pond and West Ash Pond at the WGS. Detailed closure plans for these ponds will be submitted as the closure process continues. Anticipated future submittals include, but are not limited to:

- Confirmatory testing results of CCR excavation for Unit 2 Slurry Pond;
- Interim grading and temporary cover plans for the West Ash Pond (submitted to DHEC on August 10, 2015);
- Phased excavation plans for beneficial use of CCR materials and/or landfill disposal for the West Ash Pond; and
- Confirmatory testing results of CCR excavation for the West Ash Pond.

6. SUMMARY

The following presents a summary of this Plan:

- Two of the impoundments, the Unit 2 Slurry Pond and West Ash Pond, will no longer receive waste and will be closed. Santee Cooper is proposing to remove CCRs from these two ponds for beneficial use. Santee Cooper is proposing clean closure for these two ponds (i.e., removal of CCR material).

- Excavation of materials from the Unit 2 Slurry Pond is underway and anticipated to be complete by early 2016. The excavated CCR material from the Unit 2 Slurry Pond is being used to facilitate closure of the CGS Class 2 landfill. In addition to CCR excavation, the existing berms in the Unit 2 Slurry Pond will be regraded to promote stormwater runoff from the area.

- Excavated CCR material from the West Ash Pond will be beneficially used. Because of the potential extended time frame for closure of this pond, during the interim the CCR surface will be regraded and a temporary cover system will be installed to limit surface water contact with the CCR, facilitate dewatering by limiting infiltration, and promote surface water drainage.

- The Site will continue to operate in accordance with the Industrial Wastewater Permit, Industrial Stormwater Permit, and Groundwater Monitoring Plan throughout the proposed closure process.

7. REFERENCES

DHEC. "Closeout of Wastewater Treatment Systems." October 2009.

DHEC. "NPDES Wastewater Discharge Permit for WGS." 1 March 2008.

DHEC. "NPDES General Permit for Storm Water Discharges Associated with Industrial Activities (Except Construction), Permit No. SCR000000". 1 January 2011.

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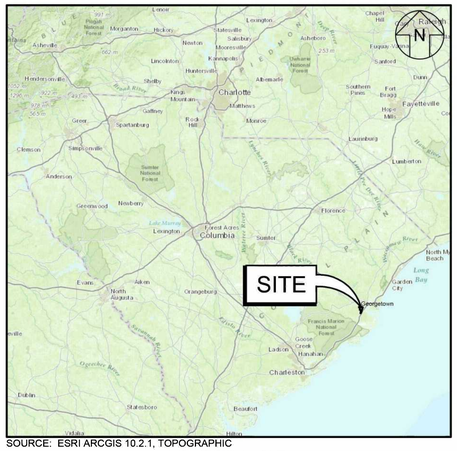
Paul C. Rizzo Associates, Inc. (PCRA), (1999), "Report: Geotechnical/Hydrogeologic Investigation: Winyah Generating Station".

Soil & Material Engineers, Inc. (S&ME), (1978), "Subsurface Investigation, Ash and Slurry Pond Dikes: Winyah Generating Station".

DRAWINGS

CONCEPTUAL CLOSURE PLAN
UNIT 2 SLURRY AND WEST ASH PONDS
WINYAH GENERATING STATION
GEORGETOWN, SOUTH CAROLINA
PROJECT NO. GSC5242
JULY 2015

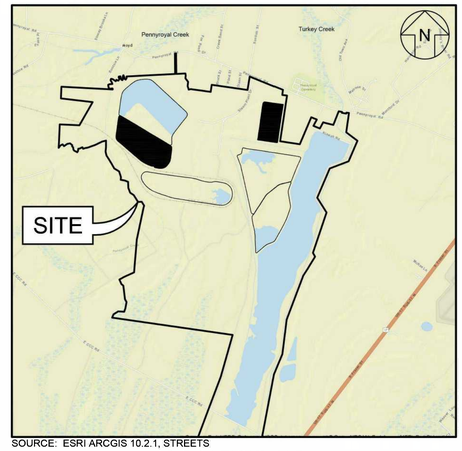
LIST OF DRAWINGS



SOURCE: ESRI ARCGIS 10.2.1, TOPOGRAPHIC

VICINITY MAP

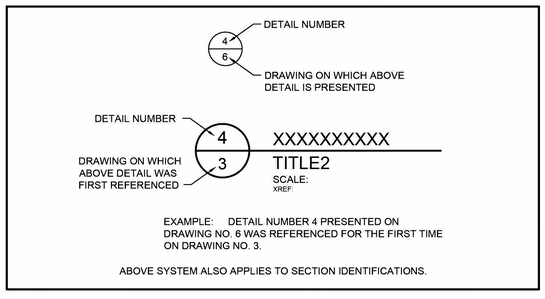
SCALE: 1"=50 MILES



SOURCE: ESRI ARCGIS 10.2.1, STREETS

LOCATION MAP

SCALE: 1"=3000'



DETAIL IDENTIFICATION LEGEND

PREPARED FOR:

santee cooper®

ONE RIVERWOOD DRIVE
MONCKS CORNER, SOUTH CAROLINA 29461

PREPARED BY:

Geosyntec consultants

104 SOUTH MAIN STREET, SUITE 115
GREENVILLE, SOUTH CAROLINA 29601
PHONE: 864.438.4900

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DRN	APP

Geosyntec consultants
104 SOUTH MAIN STREET, SUITE 115
GREENVILLE, SOUTH CAROLINA 29601 USA
PHONE: 864.438.4900

santee cooper®

TITLE: COVER SHEET

PROJECT: CONCEPTUAL CLOSURE PLAN
UNIT 2 SLURRY AND WEST ASH PONDS

SITE: SANTEE COOPER - WINYAH GENERATING STATION
GEORGETOWN, SOUTH CAROLINA

DESIGN BY:	BLW	DATE:	JULY 2015
DRAWN BY:	CET	PROJECT NO.:	GSC5242
CHECKED BY:	BLW	FILE:	W-0-SC-585-00-0020-001
REVIEWED BY:	RND	DRAWING NO.:	
APPROVED BY:	RBW	1 OF 4	

M:\S\SANTEE COOPER\SANTEE COOPER - WINYAH\0020-WINYAH CONCEPT CLOSURE\DRAWINGS (VW-0-SC-585-00-0020-001

APPROXIMATE PENNYROYAL CREEK LOCATION

SLURRY POND 3 & 4

PROPERTY LINE

UNIT 2 SLURRY POND INTERIM GRADING PLAN (2/3)

DISCHARGE PUMP LATITUDE N033°20'05" LONGITUDE W079°20'55"

UNIT 2 SLURRY POND

DIVIDER DIKE

WEST ASH POND

GENERATING PLANT

WEST ASH POND INTERIM CAP PLAN (1/3)

INTAKE CANAL

TURKEY CREEK

EMERGENCY DISCHARGE STRUCTURE LATITUDE N033°19'50" LONGITUDE W079°20'25"

EMERGENCY SPILLWAY, OUTFALL 001 LATITUDE N033°19'48" LONGITUDE W079°20'18"

DISCHARGE PUMP STATION STRUCTURE LATITUDE N033°19'40" LONGITUDE W079°21'54"

COAL PILE

PIPE BRIDGE

ASH POND A

SOUTH ASH POND

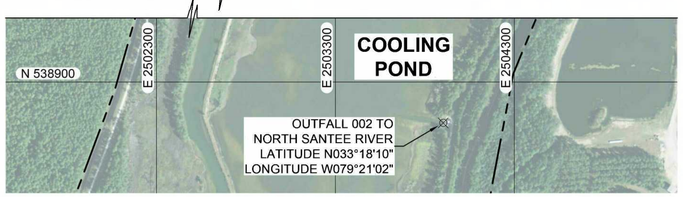
DISCHARGE CANAL

ASH POND B

COOLING POND

N 550900
N 549900
N 548900
N 547900
N 546900
N 545900
N 544900

E 2498300
E 2499300
E 2500300
E 2501300
E 2502300
E 2503300
E 2504300
E 2505300
E 2506300
E 2507300



LEGEND

- APPROXIMATE LIMIT OF ASH PONDS
- PROPERTY LINE
- DIRT/GRAVEL ROAD
- EXISTING GRADES (10)
- GAS LINE (GAS)
- OVERHEAD ELECTRIC LINE (OE)
- RAILROAD TRACKS
- ROADWAY
- WETLAND SURVEY
- JURISDICTIONAL WETLANDS
- PENNYROYAL CREEK
- WATER
- FLOW ARROW
- EXISTING EMERGENCY SPILLWAY, OUTFALL 001 LATITUDE N033°19'48" LONGITUDE W079°20'18"
- APPROXIMATE OUTFALL LOCATION MARKER (LAT-LONG)

NOTES:

1. TOPOGRAPHIC SURVEY PROVIDED BY THOMAS & HUTTON DATED 06/29/11 AND REVISED ON 01/14/12.
2. PROPERTY BOUNDARY LINE PROVIDED BY THOMAS & HUTTON, DRAWING TITLED "PLAT OF THE BOUNDARY AND COMBINATION OF VARIOUS PARCELS CONTAINING 2527.47 ACRES TOTAL COMPRISING WINYAH GENERATING STATION AND THE SUBDIVISION TO CREATE TRACT A AND TRACT B", PLAT DATE 11/25/13.
3. COORDINATES AND DIRECTIONS SHOWN ON THIS DRAWING ARE BASED ON SOUTH CAROLINA STATE PLANE COORDINATE SYSTEM (NAD83) (CORS) (INT'L FT). DISTANCES SHOWN ARE GROUND DISTANCES, NOT GRID DISTANCES.
4. ELEVATIONS ON THIS SURVEY ARE REFERENCED TO NGVD 1929 DATUM AS DERIVED FROM NGS MONUMENT PID#DD1957.

0 400' 800'
SCALE IN FEET

REV	DATE	DESCRIPTION	DRN	APP

Geosyntec consultants
104 SOUTH MAIN STREET, SUITE 115
GREENVILLE, SOUTH CAROLINA 29601 USA
PHONE: 864.438.4900

santee cooper

TITLE: EXISTING CONDITIONS

PROJECT: CONCEPTUAL CLOSURE PLAN
UNIT 2 SLURRY AND WEST ASH PONDS

SITE: SANTEE COOPER - WINYAH GENERATING STATION
GEORGETOWN, SOUTH CAROLINA

DESIGN BY:	BLW	DATE:	JULY 2015
DRAWN BY:	CET	PROJECT NO.:	GSC5242
CHECKED BY:	BLW	FILE:	W-0-SC-585-00-0020-002
REVIEWED BY:	RND	DRAWING NO.:	2 OF 4
APPROVED BY:	RBW		

NOT FOR CONSTRUCTION

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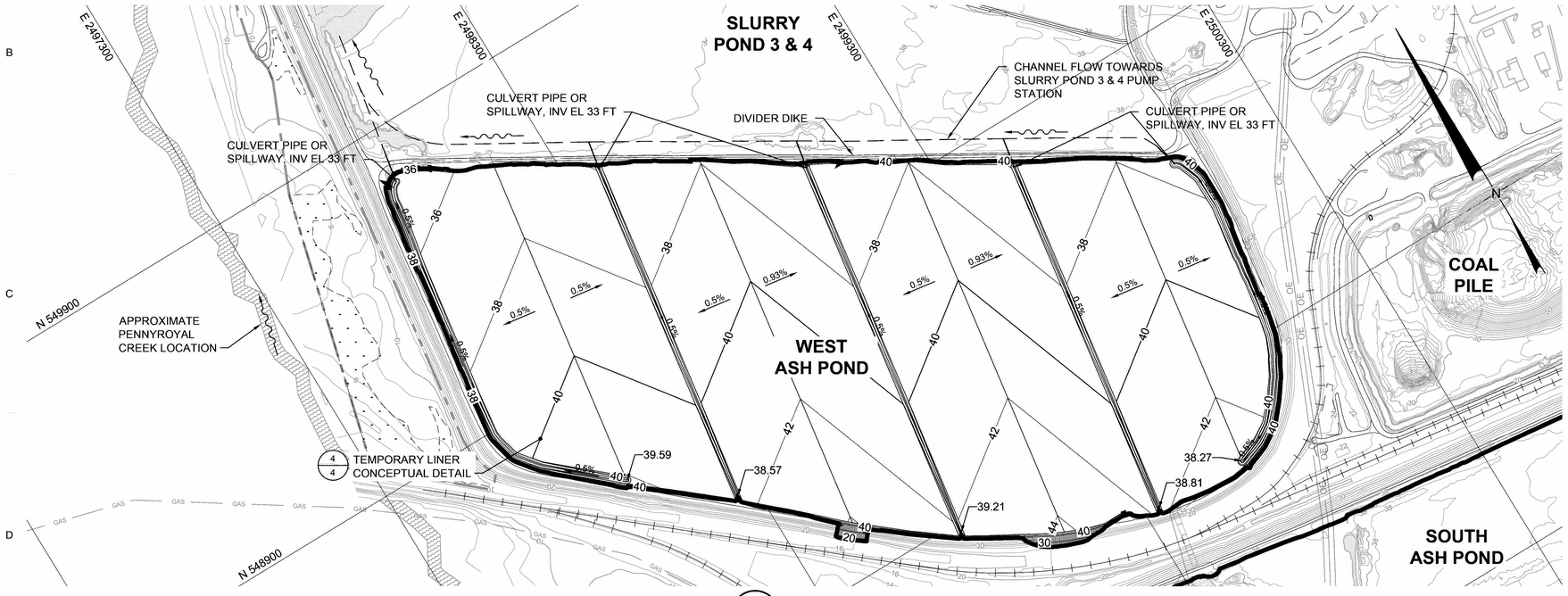
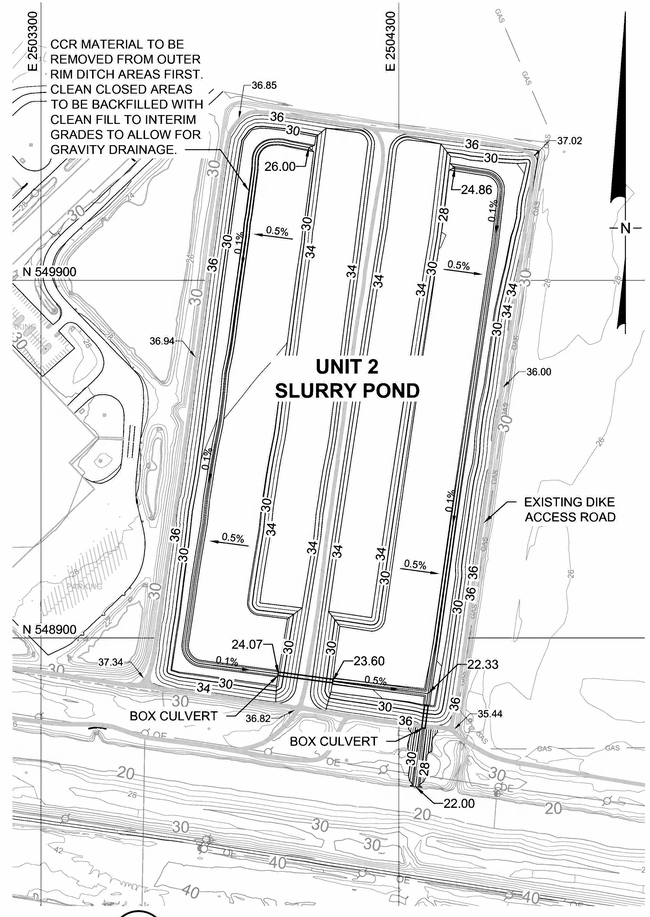


1/2 PLAN

WEST ASH POND INTERIM CAP CONCEPT

SCALE: 1"=200'

XREF: W-0-SC-585-00-X0020-007



2/2 PLAN

UNIT 2 SLURRY POND INTERIM GRADING CONCEPT

SCALE: 1"=200'

XREF: W-0-SC-585-00-X0020-007

LEGEND

- APPROXIMATE LIMIT OF INTERIM CAPPING GRADES
- 30 — CLOSURE GRADE MAJOR ELEVATION CONTOUR
- CULVERT / DISCHARGE STRUCTURE
- GENERALIZED CHANNEL FLOW
- DIRT/GRAVEL ROAD
- 10 — EXISTING GRADES
- GAS — GAS LINE
- OE — OVERHEAD ELECTRIC LINE
- RAILROAD TRACKS
- ROADWAY
- WETLAND SURVEY
- JURISDICTIONAL WETLANDS
- PENNYROYAL CREEK
- WATER
- FLOW ARROW
- 0.5% GRADE LABEL
- 22.00 SPOT ELEVATION LABEL
- 36.00 EXISTING DIKE ELEVATION LABEL

0 200' 400'

SCALE IN FEET

REV	DATE	DESCRIPTION	DRN	APP

Geosyntec consultants

104 SOUTH MAIN STREET, SUITE 115
GREENVILLE, SOUTH CAROLINA 29601 USA
PHONE: 864.438.4900

santee cooper

TITLE: CONCEPTUAL INTERIM CAPPING AND GRADING PLANS

PROJECT: CONCEPTUAL CLOSURE PLAN
UNIT 2 SLURRY AND WEST ASH PONDS

SITE: SANTEE COOPER - WINYAH GENERATING STATION
GEORGETOWN, SOUTH CAROLINA

DESIGN BY:	BLW	DATE:	JULY 2015
DRAWN BY:	CET	PROJECT NO.:	GSC5242
CHECKED BY:	BLW	FILE:	W-0-SC-585-00-0020-003
REVIEWED BY:	RND	DRAWING NO.:	
APPROVED BY:	RBW	3 OF 4	

NOT FOR CONSTRUCTION

M:\S\SANTEE COOPER\SANTEE COOPER-WINYAH\0020-WINYAH CONCEPT CLOSURE\DRAWINGS (\W-0-SC-585-00-0020-003

E 2498300
E 2499300
E 2500300
E 2501300
E 2502300
E 2503300
E 2504300

N 550900
N 549900
N 548900
N 547900
N 546900
N 545900

SLURRY POND 3 & 4

WEST ASH POND

WEST ASH POND CONCEPTUAL CLOSURE GRADE

GENERATING PLANT

COAL PILE

SOUTH ASH POND

ASH POND A

ASH POND B

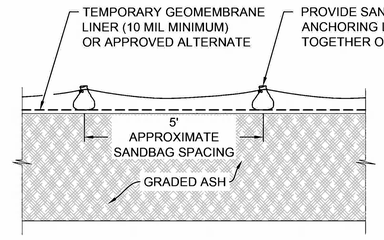
UNIT 2 SLURRY POND

UNIT 2 SLURRY POND CONCEPTUAL CLOSURE GRADE

N

LEGEND

- APPROXIMATE LIMIT OF CLEAN CLOSURE
- MAJOR ELEVATION CONTOUR
- DIRT/GRAVEL ROAD
- EXISTING GRADES
- GAS LINE
- OVERHEAD ELECTRIC LINE
- RAILROAD TRACKS
- ROADWAY
- WETLAND SURVEY
- JURISDICTIONAL WETLANDS
- PENNYROYAL CREEK
- WATER
- FLOW ARROW



4/3 DETAIL
TEMPORARY LINER CONCEPT
SCALE: NTS

0 300' 600'
SCALE IN FEET

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DRN	APP

Geosyntec consultants
104 SOUTH MAIN STREET, SUITE 115
GREENVILLE, SOUTH CAROLINA 29601 USA
PHONE: 864.438.4900

santee cooper

TITLE: CONCEPTUAL CLOSURE CONDITIONS

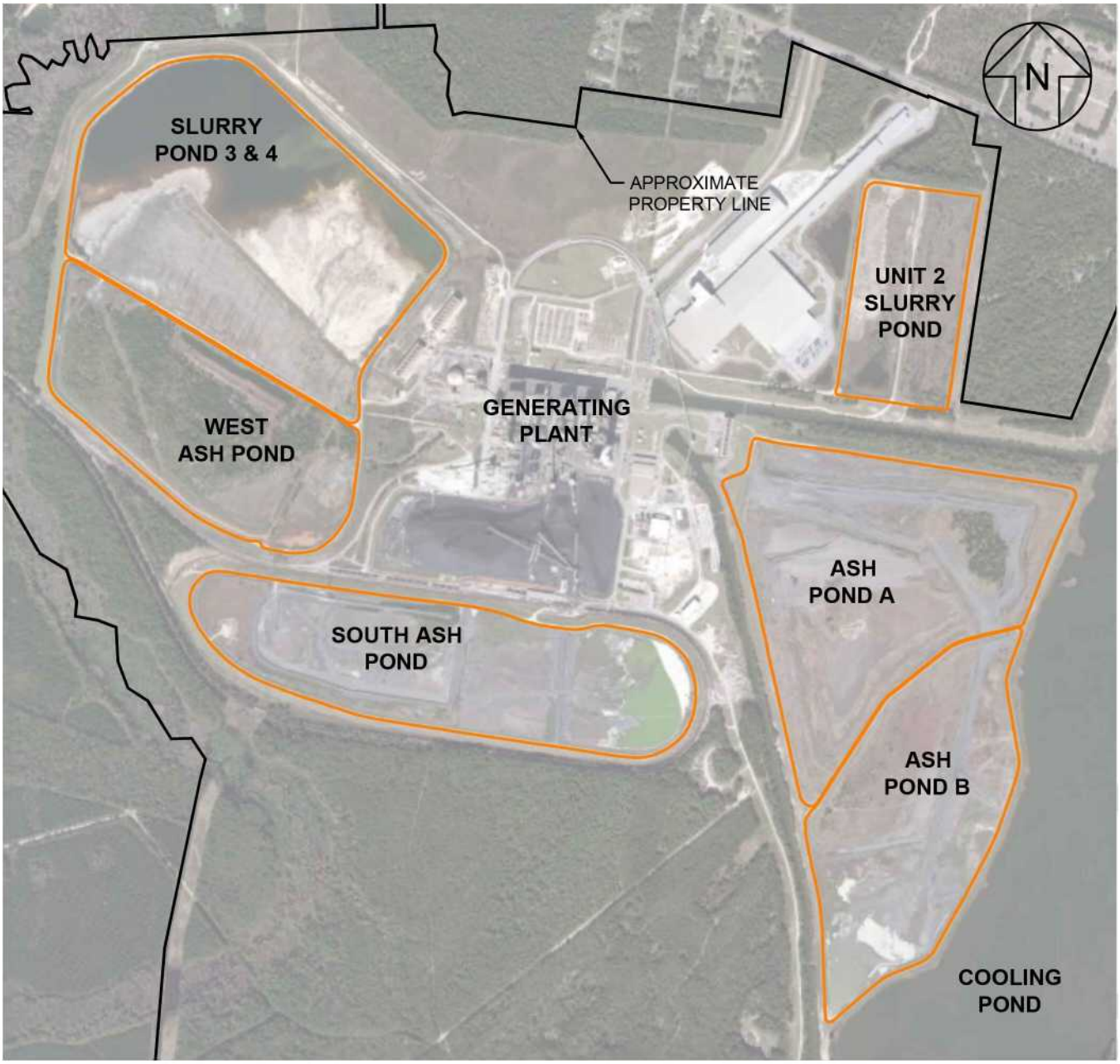
PROJECT: CONCEPTUAL CLOSURE PLAN
UNIT 2 SLURRY AND WEST ASH PONDS

SITE: SANTEE COOPER - WINYAH GENERATING STATION
GEORGETOWN, SOUTH CAROLINA

DESIGN BY:	BLW	DATE:	JULY 2015
DRAWN BY:	CET	PROJECT NO.:	GSC5242
CHECKED BY:	BLW	FILE:	W-0-SC-585-00-0020-004
REVIEWED BY:	RND	DRAWING NO.:	
APPROVED BY:	RBW		4 OF 4

M:\S\SANTEE COOPER\SANTEE COOPER - WINYAH\0020-WINYAH CONCEPT CLOSURE\DRAWINGS (\W-0-SC-585-00-0020-004

FIGURES



NOTES:

1. SOURCE OF AERIAL MAP: WORLD IMAGERY MAP SERVER, USDA FSA, DATED 10/2/2013.
2. SOURCE OF PROPERTY LINE: THOMAS & HUTTON, DRAWING TITLED "PLAT OF THE BOUNDARY AND COMBINATION OF VARIOUS PARCELS CONTAINING 2527.47 ACRES TOTAL COMPRISING WINYAH GENERATING STATION AND THE SUBDIVISION TO CREATE TRACT A AND TRACT B", PLAT DATE 11/25/13.

0 1,200'

SCALE IN FEET

LEGEND

APPROXIMATE PROPERTY LINE

POND BOUNDARIES

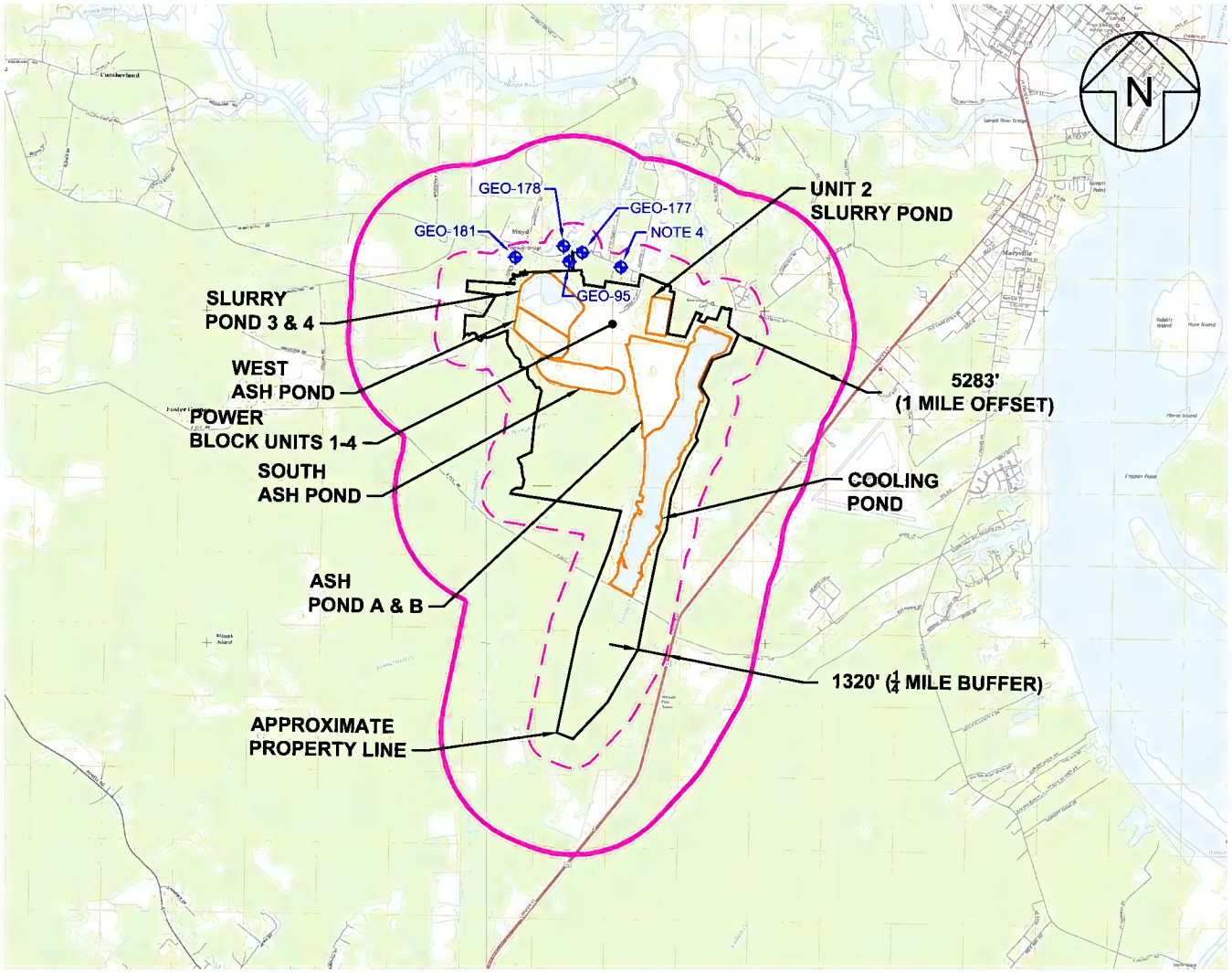
WINYAH CONCEPTUAL CLOSURE PLAN
SITE MAP

Geosyntec consultants

FIGURE 1

PROJECT NO: GSC5242 | JUNE 2015

M:\S\SANTEE COOPER\SANTEE COOPER-WINYAH\0020-WINYAH CONCEPT CLOSURE\FIGURES\W-0-SC-585-00-F0020-009



NOTES:

1. SOURCE OF USGS TOPOGRAPHIC MAP: https//store.usgs.gov, PUBLISHED BY THE US GEOLOGICAL SURVEY, GEORGETOWN SOUTH QUADRANGLE, DATE 2014, AND KILSOCK ISLAND QUADRANGLE, DATE 2014, 7.5 MINUTE SERIES.
2. SOURCE OF PROPERTY LINE: THOMAS & HUTTON, DRAWING TITLED "PLAT OF THE BOUNDARY AND COMBINATION OF VARIOUS PARCELS CONTAINING 2527.47 ACRES TOTAL COMPRISING WINYAH GENERATING STATION AND THE SUBDIVISION TO CREATE TRACT A AND TRACT B", PLAT DATE 11/25/13.
3. DRINKING WATER WELL (GEO-95, GEO-177, GEO-178, GEO-181) DATA SOURCE: SOUTH CAROLINA DEPARTMENT OF NATURAL RESOURCES WATER WELL DATA, MARCH 2015.
4. WELL IDENTIFIED WHILE SPEAKING WITH RESIDENT AT 119 PENNYROYAL ROAD. THE RESIDENT INDICATED THAT THE WELL IS CURRENTLY NOT BEING USED AS THE RESIDENCE IS PART OF THE COUNTY'S POTABLE WATER NETWORK.

0 8,000'
SCALE IN FEET

LEGEND

- ¼ MILE BUFFER
- 1 MILE OFFSET
- APPROXIMATE PROPERTY LINE
- POND BOUNDARIES
- GEO-95 WATER WELL LOCATION

FOR PERMITTING AND REVIEW

WINYAH CONCEPTUAL CLOSURE PLAN TOPOGRAPHIC SITE LOCATION MAP AND DRINKING WATER WELLS

Geosyntec consultants

FIGURE 2

PROJECT NO: GSC5242 | AUGUST 2015

M:\S\SANTEE COOPER\SANTEE COOPER-WINYAH\0020-WINYAH CONCEPT CLOSURE\FIGURES\W-0-SC-585-00-F0020-010

ATTACHMENT 1

DHEC Form 1795 – Unit 2 Slurry Pond

INDUSTRIAL WASTEWATER FACILITY CLOSURE FORM

Form purpose: This form is intended to facilitate the development and review of industrial wastewater closure plans. Although recommended, it is not required by regulation that you use this form. Please note: All closure plans must be approved by the Department as a prerequisite to closure as per R.61-67.300.F.17 of the Standards for Wastewater Facility Construction.

1. Name of Facility	Name of Facility: Winyah Generating Station – Unit 2 Slurry Pond		
2. Facility Contact	First Name: Susan	MI: W	Last Name: Jackson
	Title: Manager, CCP and Waste Management	Phone: (843) 761-8000, X5664	E-mail: Susan.Jackson@SanteeCooper.com
3. Facility Contact Mailing Address	Street or P.O. Box: PO Box 2946101, Mail Code A203		
	City: Moncks Corner	State: SC	Zip Code: 29461
4. Facility Location Address	Street, Route, or Other Specific Identifier: 661 Steam Plant Drive		
	City: Georgetown	State: SC	Zip Code: 29440
5. Legal Owner	Name: SC Public Service Authority	Phone: (843) 761-8000	
6. Legal Owner Mailing Address (If different from Facility Contact Mailing Address in Item 3 above)	Street or P.O. Box: One Riverwood Drive or PO Box 2946101		
	City: Moncks Corner	State: SC	Zip Code: 29461
7. Wastewater Facility Existence Date	Facility Existence Date (mm/dd/yyyy): 1977		
8. SIC or NAICS Codes	Primary: 221112	2nd:	3rd: 4th:
9. Facility Type	Pretreatment: ☐ yes ☒ no	NPDES: ☒ yes ☐ no	Land Application: ☐ yes ☒ no If yes, check type: ☐ wastewater ☐ sludge
10. Applicable NPDES and/or ND Permits (List All)	NPDES or ND:	NPDES or ND: SC0022471 SCR003832	NPDES or ND:
11. Wastewater Construction Permits (List All)	Permit #:	Permit #: 6078	Permit #:
	Permit #:	Permit #:	Permit #:
	Permit #:	Permit #:	Permit #:
12. Satellite Sewer Permit Coverage (If Applicable)	S S S		
13. Current Pump and Haul Approvals (List All)	Date or LOA #:	Date or LOA #:	Date or LOA #:
14. EPA ID Number (If Applicable)	S C D 0 9 7 6 3 0 5 3 7		
15. RCRA/HSWA Corrective Action			
16. Groundwater Questions	Any known releases to soil or groundwater from the wastewater treatment unit? ☐ yes ☒ no		
	Depth to groundwater (in feet): Ranges from 2.9 ft. to 8.4 ft. below ground surface (2012 - 2014)		
	Is this facility subject to groundwater monitoring requirements via a permit, order or other agreement? ☒ yes ☐ no		
	If yes, list permit number, order, number, or date of agreement: December 2010 revised sampling and analysis plan for groundwater monitoring NPDES Permit SC0022471		

17. List below the name, physical address, and telephone number for each facility that is receiving wastewater, sludge, soil, etc. as a result of this closure. Additionally, please attach a letter of acceptance from each facility. The letter of acceptance should clearly state the amount and type of waste to be received.

Name of Receiving Facility: Santee Cooper Cross Generating Station Class 2 Landfill	Name of Receiving Facility:
Address (Street, Route, or Other Specific Identifier): 553 Cross Station Road	Address (Street, Route, or Other Specific Identifier):
City: State: Zip: Cross SC 29468	City: State: Zip:
Phone: 843-761-8000 Contact: Dickie Thorndyke, Manager, Generating Station Waste types to be received: ☐ **Wastewater** ☐ **Sludge** ☐ Soils ☒ Other: FGD Slurry, (predominately calcium sulfite and calcium sulfate)	Phone: Contact: Waste types to be received: o Wastewater o Sludge o Soils o Other (specify_____)
Name of Receiving Facility:	Name of Receiving Facility:
Address (Street, Route, or Other Specific Identifier):	Address (Street, Route, or Other Specific Identifier):
City: State: Zip:	City: State: Zip:
Phone: Contact: Waste types to be received: o Wastewater o Sludge o Soils o Other (specify_____)	Phone: Contact: Waste types to be received: o Wastewater o Sludge o Soils o Other (specify_____)

18. Provide a topographic map or maps of the area extending to at least one mile beyond the property boundaries of the facility.

The map should clearly show the following:

- The legal boundaries of the facility;
- The location of any intake and discharge structures;
- The location of any wastewater treatment facilities;
- All land application sites;
- All groundwater monitoring, recovery, or injection wells (not just those associated with the wastewater treatment plant);
- All surface water bodies in the area;
- All drinking water wells within 1/4 mile of the facility identified in the public record or otherwise known to you.

On each map, include the map scale, a meridian arrow showing north, and latitude and longitude at the nearest whole second of the wastewater treatment plant and any outfall structures. Use a 7-1/2 minute series map published by the U.S. Geological Survey. If a 7-1/2 minute series map has not been published for your facility site, then you may use a 15-minute series map from the U.S. Geological Survey. If neither a 7-1/2 nor 15-minute series map has been published for your facility site, use a plant map or other appropriate map, and include all the requested information.

19. Provide a drawing showing the general layout of the wastewater treatment facility.

This drawing should be approximately to scale and should clearly show the following:

- All components of the wastewater treatment plant, each clearly labeled;
- Dimensions and materials of construction;
- The locations of any known leaks or spills; and
- The locations of any proposed soil sample or groundwater monitoring locations.

20. Provide photographs that clearly delineate all existing wastewater structures.

Photographs may be color or black and white, ground-level or aerial. Indicate the date each photograph was taken.

21. On Appendix A of this document, identify all pollutants that may be present in the wastewater treatment system by placing a check mark '√' in the 'Believed Present' column. Additionally, please list below any pollutants that may be present that are not listed on Appendix A.

Constituent	Believed Present	Constituent	Believed Present	Constituent	Believed
Calcium	√				
Sodium	√				
Potassium	√				
Sulfur	√				
Silica	√				
Chloride	√				

22. Please provide a detailed description of how each wastewater treatment component will be closed.

Additionally, in your description, please include the following:

- Your reasons for closing the system;
- If this is to be a closure of the entire wastewater treatment system or if only certain components are to be closed; and
- If the closure plan is intended to be a clean-out plan rather than a complete closure of the system (for example, if the system is being cleaned out for resale to another owner).

Use the space below and attach additional sheets as necessary; or provide as a separate attachment.

The Unit 2 Slurry Pond no longer receives coal combustion residuals or station wastewater. Santee Cooper proposes closing the Unit 2 Slurry Pond by removing all FGD slurry. Groundwater monitoring will be performed in accordance with the state approved groundwater monitoring plan throughout the closure period.

Excavation of materials from the Unit 2 Slurry Pond is underway and anticipated to be completed by early 2016. The excavated material from the Unit 2 Slurry Pond is being beneficially used for closure of the Cross Generating Station (CGS) Class 2 landfill per DHEC approval based on characterization of the waste as appropriate for placement in a Class 2 landfill. In addition to CCR excavation, the existing berms will be regraded to promote stormwater runoff as sheet flow toward the Cooling Pond Intake Canal. In general, closure of the Unit 2 Slurry Pond will include the follow steps: (1) excavation and removal of CCR materials to facilitate closure of the CGS Class 2 landfill per DHEC approval; and (2) regrading existing berms and pond area for future site industrial use.

APPENDIX A					
Pollutant	**CAS No.**	**Believed Present**	**Pollutant**	**CAS No.**	**Believed Present**
Acenaphthene	83-82-9		Chrysene	218-01-9	
Acenapthylene	208-96-8		Colbalt, Total	7440-48-4	√
Acetaldehyde	75-07-0		Color	n/a	
Acrolein	107-02-8		Copper, Total	7440-50-8	
Acrylonitrile	107-13-1		Coumaphos	56-72-4	
Aldrin	309-00-2		o-Cresol	95-48-7	
Allyl alcohol	107-18-6		m-Cresol	108-39-4	
Allyl chloride	107-05-1		p-Cresol	106-44-5	
Aluminum, Total	7429-90-5	√	Cresols	1319-77-3	
Ammonia	7664-41-7	√	Crotonaldehyde	123-73-9	
Amyl acetate	628-63-7		Cyanide, Total	57-12-5	
Aniline	62-53-3		Cyclohexane	110-82-7	
Anthracene	120-12-7		2,4-D	94-75-7	
Antimony, Total	7440-36-0		Diazinon	333-41-5	
Arsenic, Total	7440-38-2	√	Dibenz[a,h]anthracene	53-70-3	
Asbestos	1332-21-4		Dicamba	1918-00-9	
Barium, Total	7440-39-3	√	Dichlobenil	1194-65-6	
Benzene	71-43-2		Dichlone	117-80-6	
Benzidene	92-87-5		1,2-Dichlorobenzene	95-50-1	
Benz[a]anthracene	56-55-3		1,3-Dichlorobenzene	541-73-1	
Benzo[a]pyrene	50-32-8		1,4-Dichlorobenzene	106-46-7	
Benzo[ghi]perylene	191-24-2		3,3-Dichlorobenzidine	91-94-1	
Benzo[k]fluoranthene	207-08-9		Dichlorobromomethane	75-27-4	
3,4-Benzofluoranthene	205-99-2		Dichlorodifluoromethane	75-71-8	
Benzyl chloride	100-44-7		1,1-Dichloroethane	75-34-3	
Beryllium, Total	7440-41-7		1,2-Dichloroethane	107-06-2	
alpha-BHC	319-84-6		1,1-Dichloroethylene	75-35-4	
beta-BHC	319-85-7		1,2-trans-Dichloroethylene	156-60-5	
delta-BHC	319-86-8		2,4-Dichlorophenol	120-83-2	
gamma-BHC	58-89-9		1,2-Dichloropropane	78-87-5	
Biochemical Oxygen Demand (BOD)	n/a		2,2-Dichloropropionic acid	75-99-0	
Bis(2-chloroethoxy) methane	111-91-1		1,3-Dichloropropylene	542-75-6	
Bis(2-chloroethyl) ether	111-44-4		Dichlorvos	62-73-7	
Bis(2-chloroisopropyl) ether	102-80-1		4,4'-DDD	72-54-8	
Bis(2-ethylhexyl) phthalate	117-81-7		4,4'-DDE	72-55-9	
Bis(chloromethyl) ether	542-88-1		4,4'-DDT	50-29-3	
Boron, Total	7440-42-8	√	Dieldrin	60-57-1	
Bromide	24959-67-9		Diethylamine	109-89-7	
Bromoform	75-25-2		Diethyl phthalate	84-66-2	
4-Bromophenyl phenyl ether	101-55-3		Dimethylamine	124-40-3	
N-Butylamine	109-73-9		2,4-Dimethylphenol	105-67-9	
N-Butyl acetate	123-86-4		Dimethyl phthalate	131-11-3	
Butyl benzyl phthalate	85-68-7		Di-N-butylphthalate	84-74-2	
Cadmium, Total	7440-43-9	√	o-Dinitrobenzene	528-29-0	
Captan	133-06-2		m-Dinitrobenzene	99-65-0	
Carbaryl	63-25-2		4,6-Dinitro-o-cresol	534-52-1	
Carbofuran	1563-66-2		2,4-Dinitrophenol	51-28-5	
Carbon disulfide	75-15-0		2,4-Dinitrotoluene	121-14-2	
Carbon tetrachloride	56-23-5		2,6-Dinitrotoluene	606-20-2	
Chemical Oxygen Demand (COD)	n/a		Di-N-octyl phthalate	117-84-0	
Chlordane	57-74-9		1,2-Diphenylhydrazine	122-66-7	
Chlorine, Total Residual	n/a		Diquat	85-00-7	
Chlorobenzene	108-90-7		Disulfoton	298-04-4	
Chlorodibromomethane	124-48-1		Diuron	330-54-1	
Chloroethane	75-00-3		alpha-Endosulfan	959-98-8	
2-Chloroethylvinyl ether	110-75-8		beta-Endosulfan	33213-65-9	
Chloroform	67-66-3		Endosulfan sulfate	1031-07-8	
2-Chloronaphthalene	91-58-7		Endrin	72-20-8	
2-Chlorophenol	95-57-8		Endrin aldehyde	7421-93-4	
4-Chlorophenyl phenyl ether	7005-72-3		Epichlorohydrin	106-89-8	
Chlorpyrifos	2921-88-2		Ethion	563-12-2	
Chromium, Total	7440-47-3		Ethylbenzene	100-41-4	

Pollutant	CAS No.	Believed Present	Pollutant	CAS No.	Believed Present
Ethylene diamine	107-15-3		PCB-1260	11096-82-5	
Ethylene dibromide	106-93-4		p-Chloro-m-cresol	59-50-7	
Fecal Coliform	n/a		Pentachlorophenol	87-86-5	
Fluoranthene	206-44-0		pH	n/a	√
Fluorene	86-73-7		Phenanthrene	85-01-8	
Fluoride	16984-48-8	√	Phenol	108-95-2	
Formaldehyde	50-00-0		Phenols, Total	n/a	
Furfural	98-01-1		Phenolsulfonates, Total	n/a	
Guthion	86-50-0		Phosgene	75-44-5	
Heptachlor	76-44-8		Phosphorus, Total	7723-14-0	√
Heptachlor epoxide	1024-57-3		Propargite	2312-35-8	
Hexachlorobenzene	118-74-1		Propylene oxide	75-56-9	
Hexachlorobutadiene	87-68-3		Pyrene	129-00-0	
Hexachlorocyclopentadiene	77-47-4		Pyrethrins	n/a	
Hexachloroethane	67-72-1		Quinoline	91-22-5	
Indeno(1,2,3-cd)pyrene	193-39-5		Resorcinol	108-46-3	
Iron, Total	7439-89-6	√	Selenium, Total	7782-49-2	√
Isophorone	78-59-1		Silver, Total	7440-22-4	
Isoprene	78-79-5		Strontium	7440-24-6	√
Isopropanolamine	78-96-6		Strychnine	57-24-9	
Keithane	115-32-2		Styrene	100-42-5	
Kepone	143-50-0		Sulfate (as SO4)	14808-79-8	√
Lead, Total	7439-92-1	√	Sulfide (as S)	18496-25-8	√
Magnesium, Total	7439-95-4	√	Sulfite (as S03)	14265-45-3	√
Malathion	121-75-5		Surfactants	n/a	
Manganese, Total	7439-96-5	√	2,4,5-T	93-76-5	
Mercaptodimethur	2032-65-7		TDE (Tetrachlorodiphenylethane)	72-54-8	
Mercury, Total	7439-97-6		2,3,7,8-Tetrachlorodibenzo-p-dioxin	1764-01-6	
Methoxychlor	72-43-5		1,1,2,2-Tetrachloroethane	79-34-5	
Methyl bromide	74-83-9		Tetrachloroethylene	127-18-4	
Methyl chloride	74-87-3		Thallium, Total	7440-28-0	
Methyl mercaptan	74-93-1		Tin, Total	7440-31-5	
Methyl methacrylate	80-62-6		Titanium, Total	7440-32-6	√
Methyl parathion	298-00-0		Toluene	108-88-3	
Methylene chloride	75-09-2		Total Organic Carbon (TOC)	n/a	
Mevinphos	7786-34-7		Total Suspended Solids (TSS)	n/a	
Mexacarbate	315-18-4		Toxaphene	8001-35-2	
Molybdenum, Total	7439-98-7		2,4,5-TP	93-72-1	
Monoethylamine	75-04-7		1,2,4-Trichlorobenzene	120-82-1	
Monomethylamine	74-89-5		1,1,1-Trichloroethane	71-55-6	
Naled	300-76-5		1,1,2-Trichloroethane	79-00-5	
Naphthalene	91-20-3		Trichloroethylene	79-01-6	
Napthenic acid	1338-24-5		Trichlorofluoromethane	75-69-4	
Nickel, Total	7440-02-0	√	Trichlorofon	52-68-6	
Nitrate-Nitrite (as N)	n/a		2,4,6-Trichlorophenol	88-06-2	
Nitrobenzene	98-95-3		Triethanolamine	102-71-6	
Nitrogen, Total Organic (as N)	n/a		Triethylamine	121-44-8	
2-Nitrophenol	88-75-5		Trimethylamine	75-50-3	
4-Nitrophenol	100-02-7		Uranium	7440-61-1	
Nitrotoluene	1321-12-6		Vanadium	7440-62-2	
N-Nitrosodimethylamine	62-75-9		Vinyl acetate	108-05-4	
N-Nitrosodi-N-propylamine	621-64-7		Vinyl chloride	75-01-4	
N-Nitrosodiphenylamine	86-30-6		Xylene	1330-20-7	
Oil and Grease	n/a	√	Xylenol	1300-71-6	
Parathion	56-38-2		Zinc, Total	7440-66-6	
PCB-1016	12674-11-2		Zirconium	7440-67-7	
PCB-1221	11104-28-2		***Radionuclides***		
PCB-1232	11141-16-5		Alpha, Total	n/a	
PCB-1242	53469-21-9		Beta, Total	n/a	
PCB-1248	12672-29-6		Radium, Total	n/a	
PCB-1254	11097-69-1		Radium-226, Total	n/a	

Instructions

Purpose of the Form
This form is intended to facilitate the development and review of industrial wastewater closure plans. Although recommended, it is not required by regulation that you use this form. Please note: All closure plans must be approved by the Department as a prerequisite to closure as per R.61-67.300.F.17 of the Standards for Wastewater Facility Construction.

Intended Users
Owners/operators of industrial wastewater treatment facilities.

Completing the Form
Please type or print all information. If you have any questions regarding this form, please call SCDHEC at (803) 898-4300.

Where to File the Form
Three (3) copies of the completed form should be mailed to the following address:

SCDHEC
Bureau of Water
Industrial Wastewater Permitting Section
2600 Bull Street
Columbia, SC 29201

Item 1
Please provide the legal name of company at which the wastewater treatment facility is located.

Item 2
Enter the name, title, phone number, and electronic mailing address (e-mail) of the person who is familiar with the operation of the wastewater treatment facility and with the facts reported on this form and to whom all correspondence should be sent.

Item 3
Enter the complete mailing address for the facility contact above.

Item 4
Enter the physical address for the property at which the wastewater treatment facility is located.

Item 5
Provide the name and phone number of the legal owner of the wastewater treatment facility. This could be a person, firm, public organization or entity. This name should be the name registered with the SC Secretary of State to do business in SC.

Item 6
Provide the complete mailing address for the legal owner above. If address is the same as the Facility Contact Mailing Address in Item 3 you may just put 'Same as Item 3'.

Item 7
Provide the date the wastewater treatment facility first began operation.

Item 8
List, in descending order of significance, up to four 4-digit Standard Industrial Classification (SIC) codes or 2-6 digit North American Industry Classification System (NAICS) codes that best describe the principal products or services provided at the location identified in Item 4. If you are not sure of the appropriate code to use, go to the following websites to search by keywords:
http://www.osha.gov/pls/imis/sicsearch.html
http://www.census.gov/eos/www/naics/

Item 9
Please identify the type of wastewater treatment system to be closed: pretreatment (i.e. system discharges to a POTW or other treatment system not owned by the facility); NPDES (i.e. system discharges to a Waters of the State); and/or Land Application (i.e. wastewater or sludge from system is applied to the land).

Item 10
List any applicable NPDES or ND (land application) permits issued for the facility.

Item 11
List any wastewater construction permits associated with the wastewater treatment facility.

Item 12
List any satellite sewer permit coverages associated with the facility, if applicable. Note: This is a 9-digit number beginning with SSS.

Item 13
List the date or Letter of Approval (LOA) number (if available) of any pump and haul approvals.

Item 14
List the Resource Conservation and Recovery Act (RCRA) EPA Identification Number (if applicable) for the property at which the wastewater treatment facility is located. This is a 12-digit number beginning with SC and is associated with facilities with regulated hazardous waste management activities.

Item 15
Please indicate if the facility at which the wastewater treatment facility is located is subject to RCRA/HSWA corrective action. If so, this will be in a permit or order issued by SCDHEC or the Environmental Protection Agency (EPA).

Item 16
Please indicate if there are any known releases to groundwater as a result of operating the wastewater treatment unit. If the depth to groundwater is known, please provide that in the space indicated. Also, please indicate if the facility is subject to groundwater monitoring requirements via a permit, order, or other agreement and if so, provide the permit or order number or the date of the agreement.

Item 17
Provide the name, physical address, contact name, and telephone number for each facility that is receiving wastewater, sludge, contaminated soils, etc. as a result of this closure. Please include also a letter of acceptance from each facility listed. The letter of acceptance should clearly state the amount and type of waste to be received.

Item 18
Provide a topographic map or maps of the area extending to at least one mile beyond the property boundaries of the facility. The map should clearly show the following: the legal boundaries of the facility; the location of any intake and discharge structures; the location of any wastewater treatment facilities; all land application sites; all groundwater monitoring, recovery, or injection wells (not just those associated with the wastewater treatment plant); all surface water bodies in the area; all drinking water wells within 1/4 mile of the facility identified in the public record or otherwise known to you.

On each map, include the map scale, a meridian arrow showing north, and latitude and longitude at the nearest whole second of the wastewater treatment plant and any outfall structures. Use a 7-1/2 minute series map published by the U.S. Geological Survey. If a 7-1/2 minute series map has not been published for your facility site, then you may use a 15-minute series map from the U.S. Geological Survey. If neither a 7-1/2 nor 15-minute series map has been published for your facility site, use a plant map or other appropriate map, and include all the requested information.

Item 19
Provide a drawing showing the general layout of the wastewater treatment facility. This drawing should be approximately to scale and should clearly show the following: all components of the wastewater treatment plant, each clearly labeled; dimensions; materials of construction; the locations of any known leaks or spills; and the locations of any proposed soil sample or groundwater monitoring locations.

Item 20
Provide photographs that clearly delineate all existing wastewater structures. Photographs may be color or black and white, ground-level or aerial. Indicate the date each photograph was taken.

Item 21
On Appendix A of this document, identify all pollutants that may be present in the wastewater treatment system by placing a check mark '√' in the 'Believed Present' column. Additionally, please list in the additional spaces provided any pollutants that may be present that are not listed on Appendix A.

Item 22
Please provide a detailed description of how each wastewater treatment component will be closed. Also, in your description please indicate your reasons for closing the system; if this is to be a closure of the entire wastewater treatment system or if only certain components are to be closed; and if the closure plan is intended to be a clean-out plan rather than a complete closure of the system (for example, if the system is being cleaned out for resale to another owner). Attach additional sheets as necessary.

Appendix A
See Item 21 above.

ATTACHMENT 2

DHEC Form 1795 – West Ash Pond

INDUSTRIAL WASTEWATER FACILITY CLOSURE FORM

Form purpose: This form is intended to facilitate the development and review of industrial wastewater closure plans. Although recommended, it is not required by regulation that you use this form. Please note: All closure plans must be approved by the Department as a prerequisite to closure as per R.61-67.300.F.17 of the Standards for Wastewater Facility Construction.

1. Name of Facility	Name of Facility: SC Public Service Authority Winyah Generating Station – West Ash Pond		
2. Facility Contact	First Name: Susan	MI: W	Last Name: Jackson
	Title: Manager, CCP and Waste Management	Phone: (843) 761-4095	E-mail: Susan.Jackson@SanteeCooper.com
3. Facility Contact Mailing Address	Street or P.O. Box: PO Box 2946101 Mail Code A203		
	City: Moncks Corner	State: SC	Zip Code: 29461
4. Facility Location Address	Street, Route, or Other Specific Identifier: 661 Steam Plant Drive		
	City: Georgetown	State: SC	Zip Code: 29440
5. Legal Owner	Name: Santee Cooper	Phone: (843) 761-8000	
6. Legal Owner Mailing Address (If different from Facility Contact Mailing Address in Item 3 above)	Street or P.O. Box: One Riverwood Drive or PO Box 2946101		
	City: Moncks Corner	State: SC	Zip Code: 29461
7. Wastewater Facility Existence Date	Facility Existence Date (mm/dd/yyyy): 1980		
8. SIC or NAICS Codes	Primary: 221112	2nd:	3rd: 4th:
9. Facility Type	Pretreatment: ☐ yes ☒ no	NPDES: ☒ yes ☐ no	Land Application: ☐ yes ☒ no If yes, check type: ☐ wastewater ☐ sludge
10. Applicable NPDES and/or ND Permits (List All)	NPDES or ND:	NPDES or ND: SC0022471 SCR003832	NPDES or ND:
11. Wastewater Construction Permits (List All)	Permit #:	Permit #: 6078	Permit #:
	Permit #:	Permit #:	Permit #:
	Permit #:	Permit #:	Permit #:
12. Satellite Sewer Permit Coverage (If Applicable)	S S S		
13. Current Pump and Haul Approvals (List All)	Date or LOA #:	Date or LOA #:	Date or LOA #:
14. EPA ID Number (If Applicable)	S C D 0 9 7 6 3 0 5 3 7		
15. RCRA/HSWA Corrective Action			
16. Groundwater Questions	Any known releases to soil or groundwater from the wastewater treatment unit? ☐ yes ☒ no		
	Depth to groundwater (in feet): Ranges from 1.0 ft. to 6.9 ft. below ground surface (2012 - 2014)		
	Is this facility subject to groundwater monitoring requirements via a permit, order or other agreement? ☒ yes ☐ no		
	If yes, list permit number, order, number, or date of agreement: December 2010 December 2010 revised sampling and analysis plan for groundwater monitoring NPDES Permit SC0022471		

17. List below the name, physical address, and telephone number for each facility that is receiving wastewater, sludge, soil, etc. as a result of this closure. Additionally, please attach a letter of acceptance from each facility. The letter of acceptance should clearly state the amount and type of waste to be received.

Name of Receiving Facility: SEFA Winyah STAR Plant	Name of Receiving Facility:
Address (Street, Route, or Other Specific Identifier): 661 Steam Plant Drive	Address (Street, Route, or Other Specific Identifier):
City: Georgetown State: SC Zip: 29440	City: State: Zip:
Phone: 888-339-7332 Contact: Jim Clayton, VP Operations Waste types to be received: ☐ Wastewater ☐ Sludge ☐ Soils ☒ Other : Fly Ash and Bottom Ash	Phone: Contact: Waste types to be received: o Wastewater o Sludge o Soils o Other (specify_____)
Name of Receiving Facility:	Name of Receiving Facility:
Address (Street, Route, or Other Specific Identifier):	Address (Street, Route, or Other Specific Identifier):
City: State: Zip:	City: State: Zip:
Phone: Contact: Waste types to be received: o Wastewater o Sludge o Soils o Other (specify_____)	Phone: Contact: Waste types to be received: o Wastewater o Sludge o Soils o Other (specify_____)

18. Provide a topographic map or maps of the area extending to at least one mile beyond the property boundaries of the facility.

The map should clearly show the following:

- The legal boundaries of the facility;
- The location of any intake and discharge structures;
- The location of any wastewater treatment facilities;
- All land application sites;
- All groundwater monitoring, recovery, or injection wells (not just those associated with the wastewater treatment plant);
- All surface water bodies in the area;
- All drinking water wells within 1/4 mile of the facility identified in the public record or otherwise known to you.

On each map, include the map scale, a meridian arrow showing north, and latitude and longitude at the nearest whole second of the wastewater treatment plant and any outfall structures. Use a 7-1/2 minute series map published by the U.S. Geological Survey. If a 7-1/2 minute series map has not been published for your facility site, then you may use a 15-minute series map from the U.S. Geological Survey. If neither a 7-1/2 nor 15-minute series map has been published for your facility site, use a plant map or other appropriate map, and include all the requested information.

19. Provide a drawing showing the general layout of the wastewater treatment facility.

This drawing should be approximately to scale and should clearly show the following:

- All components of the wastewater treatment plant, each clearly labeled;
- Dimensions and materials of construction;
- The locations of any known leaks or spills; and
- The locations of any proposed soil sample or groundwater monitoring locations.

20. Provide photographs that clearly delineate all existing wastewater structures.

Photographs may be color or black and white, ground-level or aerial. Indicate the date each photograph was taken.

21. On Appendix A of this document, identify all pollutants that may be present in the wastewater treatment system by placing a check mark '√' in the 'Believed Present' column. Additionally, please list below any pollutants that may be present that are not listed on Appendix A.

Constituent	Believed Present	Constituent	Believed Present	Constituent	Believed
Silica	√				
Calcium	√				
Sodium	√				
Potassium	√				
Cerium	√				
Chloride	√				

22. Please provide a detailed description of how each wastewater treatment component will be closed.

Additionally, in your description, please include the following:

- Your reasons for closing the system;
- If this is to be a closure of the entire wastewater treatment system or if only certain components are to be closed; and
- If the closure plan is intended to be a clean-out plan rather than a complete closure of the system (for example, if the system is being cleaned out for resale to another owner).

Use the space below and attach additional sheets as necessary; or provide as a separate attachment.

The West Ash Pond only receives station wastewater. It no longer receives coal combustion residuals. Santee Cooper proposes closing the West Ash Pond by redirecting station wastewater flows and removing all ash. Groundwater monitoring will be performed in accordance with the approved groundwater monitoring plan throughout the closure period.

Excavation of materials from the West Ash Pond for beneficial use has occurred in the past. In 2015 construction of SEFA's Winyah STAR Plant was completed and brought on line for the purpose of processing ponded ash for beneficial use. The rate of excavation of existing CCR material from this pond is dictated by the processing capacity of the beneficial use facility as well as by market demand for the product.

Because of the potential extended time frame for closure of this pond, several intermediate steps are incorporated in the closure process. In general, closure of the West Ash Pond will include the following steps: (1) remove free water from above the natural ground surface by modifying existing drainage and wastewater management infrastructure to provide gravity drainage from the pond; (2) regrade CCR to stabilize it and promote stormwater drainage during the phased closure period; (3) construct a temporary cover to minimize infiltration of rainwater into the CCR material and enhance stabilization; (4) excavate, mix, screen, and remove CCR for beneficial use; and (5) regrade existing berms for future site industrial use.

APPENDIX A					
Pollutant	**CAS No.**	**Believed Present**	**Pollutant**	**CAS No.**	**Believed Present**
Acenaphthene	83-82-9		Chrysene	218-01-9	
Acenapthylene	208-96-8		Colbalt, Total	7440-48-4	√
Acetaldehyde	75-07-0		Color	n/a	
Acrolein	107-02-8		Copper, Total	7440-50-8	√
Acrylonitrile	107-13-1		Coumaphos	56-72-4	
Aldrin	309-00-2		o-Cresol	95-48-7	
Allyl alcohol	107-18-6		m-Cresol	108-39-4	
Allyl chloride	107-05-1		p-Cresol	106-44-5	
Aluminum, Total	7429-90-5	√	Cresols	1319-77-3	
Ammonia	7664-41-7	√	Crotonaldehyde	123-73-9	
Amyl acetate	628-63-7		Cyanide, Total	57-12-5	
Aniline	62-53-3		Cyclohexane	110-82-7	
Anthracene	120-12-7		2,4-D	94-75-7	
Antimony, Total	7440-36-0		Diazinon	333-41-5	
Arsenic, Total	7440-38-2	√	Dibenz[a,h]anthracene	53-70-3	
Asbestos	1332-21-4		Dicamba	1918-00-9	
Barium, Total	7440-39-3	√	Dichlobenil	1194-65-6	
Benzene	71-43-2		Dichlone	117-80-6	
Benzidene	92-87-5		1,2-Dichlorobenzene	95-50-1	
Benz[a]anthracene	56-55-3		1,3-Dichlorobenzene	541-73-1	
Benzo[a]pyrene	50-32-8		1,4-Dichlorobenzene	106-46-7	
Benzo[ghi]perylene	191-24-2		3,3-Dichlorobenzidine	91-94-1	
Benzo[k]fluoranthene	207-08-9		Dichlorobromomethane	75-27-4	
3,4-Benzofluoranthene	205-99-2		Dichlorodifluoromethane	75-71-8	
Benzyl chloride	100-44-7		1,1-Dichloroethane	75-34-3	
Beryllium, Total	7440-41-7	√	1,2-Dichloroethane	107-06-2	
alpha-BHC	319-84-6		1,1-Dichloroethylene	75-35-4	
beta-BHC	319-85-7		1,2-trans-Dichloroethylene	156-60-5	
delta-BHC	319-86-8		2,4-Dichlorophenol	120-83-2	
gamma-BHC	58-89-9		1,2-Dichloropropane	78-87-5	
Biochemical Oxygen Demand (BOD)	n/a		2,2-Dichloropropionic acid	75-99-0	
Bis(2-chloroethoxy) methane	111-91-1		1,3-Dichloropropylene	542-75-6	
Bis(2-chloroethyl) ether	111-44-4		Dichlorvos	62-73-7	
Bis(2-chloroisopropyl) ether	102-80-1		4,4'-DDD	72-54-8	
Bis(2-ethylhexyl) phthalate	117-81-7		4,4'-DDE	72-55-9	
Bis(chloromethyl) ether	542-88-1		4,4'-DDT	50-29-3	
Boron, Total	7440-42-8	√	Dieldrin	60-57-1	
Bromide	24959-67-9		Diethylamine	109-89-7	
Bromoform	75-25-2		Diethyl phthalate	84-66-2	
4-Bromophenyl phenyl ether	101-55-3		Dimethylamine	124-40-3	
N-Butylamine	109-73-9		2,4-Dimethylphenol	105-67-9	
N-Butyl acetate	123-86-4		Dimethyl phthalate	131-11-3	
Butyl benzyl phthalate	85-68-7		Di-N-butylphthalate	84-74-2	
Cadmium, Total	7440-43-9		o-Dinitrobenzene	528-29-0	
Captan	133-06-2		m-Dinitrobenzene	99-65-0	
Carbaryl	63-25-2		4,6-Dinitro-o-cresol	534-52-1	
Carbofuran	1563-66-2		2,4-Dinitrophenol	51-28-5	
Carbon disulfide	75-15-0		2,4-Dinitrotoluene	121-14-2	
Carbon tetrachloride	56-23-5		2,6-Dinitrotoluene	606-20-2	
Chemical Oxygen Demand (COD)	n/a		Di-N-octyl phthalate	117-84-0	
Chlordane	57-74-9		1,2-Diphenylhydrazine	122-66-7	
Chlorine, Total Residual	n/a		Diquat	85-00-7	
Chlorobenzene	108-90-7		Disulfoton	298-04-4	
Chlorodibromomethane	124-48-1		Diuron	330-54-1	
Chloroethane	75-00-3		alpha-Endosulfan	959-98-8	
2-Chloroethylvinyl ether	110-75-8		beta-Endosulfan	33213-65-9	
Chloroform	67-66-3		Endosulfan sulfate	1031-07-8	
2-Chloronaphthalene	91-58-7		Endrin	72-20-8	
2-Chlorophenol	95-57-8		Endrin aldehyde	7421-93-4	
4-Chlorophenyl phenyl ether	7005-72-3		Epichlorohydrin	106-89-8	
Chlorpyrifos	2921-88-2		Ethion	563-12-2	
Chromium, Total	7440-47-3	√	Ethylbenzene	100-41-4	

Pollutant	CAS No.	Believed Present	Pollutant	CAS No.	Believed Present
Ethylene diamine	107-15-3		PCB-1260	11096-82-5	
Ethylene dibromide	106-93-4		p-Chloro-m-cresol	59-50-7	
Fecal Coliform	n/a		Pentachlorophenol	87-86-5	
Fluoranthene	206-44-0		pH	n/a	√
Fluorene	86-73-7		Phenanthrene	85-01-8	
Fluoride	16984-48-8	√	Phenol	108-95-2	
Formaldehyde	50-00-0		Phenols, Total	n/a	
Furfural	98-01-1		Phenolsulfonates, Total	n/a	
Guthion	86-50-0		Phosgene	75-44-5	
Heptachlor	76-44-8		Phosphorus, Total	7723-14-0	
Heptachlor epoxide	1024-57-3		Propargite	2312-35-8	
Hexachlorobenzene	118-74-1		Propylene oxide	75-56-9	
Hexachlorobutadiene	87-68-3		Pyrene	129-00-0	
Hexachlorocyclopentadiene	77-47-4		Pyrethrins	n/a	
Hexachloroethane	67-72-1		Quinoline	91-22-5	
Indeno(1,2,3-cd)pyrene	193-39-5		Resorcinol	108-46-3	
Iron, Total	7439-89-6	√	Selenium, Total	7782-49-2	√
Isophorone	78-59-1		Silver, Total	7440-22-4	
Isoprene	78-79-5		Strontium	7440-24-6	√
Isopropanolamine	78-96-6		Strychnine	57-24-9	
Keithane	115-32-2		Styrene	100-42-5	
Kepone	143-50-0		Sulfate (as SO4)	14808-79-8	√
Lead, Total	7439-92-1	√	Sulfide (as S)	18496-25-8	
Magnesium, Total	7439-95-4	√	Sulfite (as S03)	14265-45-3	
Malathion	121-75-5		Surfactants	n/a	
Manganese, Total	7439-96-5	√	2,4,5-T	93-76-5	
Mercaptodimethur	2032-65-7		TDE (Tetrachlorodiphenylethane)	72-54-8	
Mercury, Total	7439-97-6	√	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1764-01-6	
Methoxychlor	72-43-5		1,1,2,2-Tetrachloroethane	79-34-5	
Methyl bromide	74-83-9		Tetrachloroethylene	127-18-4	
Methyl chloride	74-87-3		Thallium, Total	7440-28-0	√
Methyl mercaptan	74-93-1		Tin, Total	7440-31-5	
Methyl methacrylate	80-62-6		Titanium, Total	7440-32-6	√
Methyl parathion	298-00-0		Toluene	108-88-3	
Methylene chloride	75-09-2		Total Organic Carbon (TOC)	n/a	
Mevinphos	7786-34-7		Total Suspended Solids (TSS)	n/a	
Mexacarbate	315-18-4		Toxaphene	8001-35-2	
Molybdenum, Total	7439-98-7	√	2,4,5-TP	93-72-1	
Monoethylamine	75-04-7		1,2,4-Trichlorobenzene	120-82-1	
Monomethylamine	74-89-5		1,1,1-Trichloroethane	71-55-6	
Naled	300-76-5		1,1,2-Trichloroethane	79-00-5	
Naphthalene	91-20-3		Trichloroethylene	79-01-6	
Napthenic acid	1338-24-5		Trichlorofluoromethane	75-69-4	
Nickel, Total	7440-02-0	√	Trichlorofon	52-68-6	
Nitrate-Nitrite (as N)	n/a		2,4,6-Trichlorophenol	88-06-2	
Nitrobenzene	98-95-3		Triethanolamine	102-71-6	
Nitrogen, Total Organic (as N)	n/a		Triethylamine	121-44-8	
2-Nitrophenol	88-75-5		Trimethylamine	75-50-3	
4-Nitrophenol	100-02-7		Uranium	7440-61-1	
Nitrotoluene	1321-12-6		Vanadium	7440-62-2	√
N-Nitrosodimethylamine	62-75-9		Vinyl acetate	108-05-4	
N-Nitrosodi-N-propylamine	621-64-7		Vinyl chloride	75-01-4	
N-Nitrosodiphenylamine	86-30-6		Xylene	1330-20-7	
Oil and Grease	n/a	√	Xylenol	1300-71-6	
Parathion	56-38-2		Zinc, Total	7440-66-6	√
PCB-1016	12674-11-2		Zirconium	7440-67-7	
PCB-1221	11104-28-2		***Radionuclides***		
PCB-1232	11141-16-5		Alpha, Total	n/a	
PCB-1242	53469-21-9		Beta, Total	n/a	
PCB-1248	12672-29-6		Radium, Total	n/a	
PCB-1254	11097-69-1		Radium-226, Total	n/a	

Instructions

Purpose of the Form
This form is intended to facilitate the development and review of industrial wastewater closure plans. Although recommended, it is not required by regulation that you use this form. Please note: All closure plans must be approved by the Department as a prerequisite to closure as per R.61-67.300.F.17 of the Standards for Wastewater Facility Construction.

Intended Users
Owners/operators of industrial wastewater treatment facilities.

Completing the Form
Please type or print all information. If you have any questions regarding this form, please call SCDHEC at (803) 898-4300.

Where to File the Form
Three (3) copies of the completed form should be mailed to the following address:

SCDHEC
Bureau of Water
Industrial Wastewater Permitting Section
2600 Bull Street
Columbia, SC 29201

Item 1
Please provide the legal name of company at which the wastewater treatment facility is located.

Item 2
Enter the name, title, phone number, and electronic mailing address (e-mail) of the person who is familiar with the operation of the wastewater treatment facility and with the facts reported on this form and to whom all correspondence should be sent.

Item 3
Enter the complete mailing address for the facility contact above.

Item 4
Enter the physical address for the property at which the wastewater treatment facility is located.

Item 5
Provide the name and phone number of the legal owner of the wastewater treatment facility. This could be a person, firm, public organization or entity. This name should be the name registered with the SC Secretary of State to do business in SC.

Item 6
Provide the complete mailing address for the legal owner above. If address is the same as the Facility Contact Mailing Address in Item 3 you may just put 'Same as Item 3'.

Item 7
Provide the date the wastewater treatment facility first began operation.

Item 8
List, in descending order of significance, up to four 4-digit Standard Industrial Classification (SIC) codes or 2-6 digit North American Industry Classification System (NAICS) codes that best describe the principal products or services provided at the location identified in Item 4. If you are not sure of the appropriate code to use, go to the following websites to search by keywords:
http://www.osha.gov/pls/imis/sicsearch.html
http://www.census.gov/eos/www/naics/

Item 9
Please identify the type of wastewater treatment system to be closed: pretreatment (i.e. system discharges to a POTW or other treatment system not owned by the facility); NPDES (i.e. system discharges to a Waters of the State); and/or Land Application (i.e. wastewater or sludge from system is applied to the land).

Item 10
List any applicable NPDES or ND (land application) permits issued for the facility.

Item 11
List any wastewater construction permits associated with the wastewater treatment facility.

Item 12
List any satellite sewer permit coverages associated with the facility, if applicable. Note: This is a 9-digit number beginning with SSS.

Item 13
List the date or Letter of Approval (LOA) number (if available) of any pump and haul approvals.

Item 14
List the Resource Conservation and Recovery Act (RCRA) EPA Identification Number (if applicable) for the property at which the wastewater treatment facility is located. This is a 12-digit number beginning with SC and is associated with facilities with regulated hazardous waste management activities.

Item 15
Please indicate if the facility at which the wastewater treatment facility is located is subject to RCRA/HSWA corrective action. If so, this will be in a permit or order issued by SCDHEC or the Environmental Protection Agency (EPA).

Item 16
Please indicate if there are any known releases to groundwater as a result of operating the wastewater treatment unit. If the depth to groundwater is known, please provide that in the space indicated. Also, please indicate if the facility is subject to groundwater monitoring requirements via a permit, order, or other agreement and if so, provide the permit or order number or the date of the agreement.

Item 17
Provide the name, physical address, contact name, and telephone number for each facility that is receiving wastewater, sludge, contaminated soils, etc. as a result of this closure. Please include also a letter of acceptance from each facility listed. The letter of acceptance should clearly state the amount and type of waste to be received.

Item 18
Provide a topographic map or maps of the area extending to at least one mile beyond the property boundaries of the facility. The map should clearly show the following: the legal boundaries of the facility; the location of any intake and discharge structures; the location of any wastewater treatment facilities; all land application sites; all groundwater monitoring, recovery, or injection wells (not just those associated with the wastewater treatment plant); all surface water bodies in the area; all drinking water wells within 1/4 mile of the facility identified in the public record or otherwise known to you.

On each map, include the map scale, a meridian arrow showing north, and latitude and longitude at the nearest whole second of the wastewater treatment plant and any outfall structures. Use a 7-1/2 minute series map published by the U.S. Geological Survey. If a 7-1/2 minute series map has not been published for your facility site, then you may use a 15-minute series map from the U.S. Geological Survey. If neither a 7-1/2 nor 15-minute series map has been published for your facility site, use a plant map or other appropriate map, and include all the requested information.

Item 19
Provide a drawing showing the general layout of the wastewater treatment facility. This drawing should be approximately to scale and should clearly show the following: all components of the wastewater treatment plant, each clearly labeled; dimensions; materials of construction; the locations of any known leaks or spills; and the locations of any proposed soil sample or groundwater monitoring locations.

Item 20
Provide photographs that clearly delineate all existing wastewater structures. Photographs may be color or black and white, ground-level or aerial. Indicate the date each photograph was taken.

Item 21
On Appendix A of this document, identify all pollutants that may be present in the wastewater treatment system by placing a check mark '√' in the 'Believed Present' column. Additionally, please list in the additional spaces provided any pollutants that may be present that are not listed on Appendix A.

Item 22
Please provide a detailed description of how each wastewater treatment component will be closed. Also, in your description please indicate your reasons for closing the system; if this is to be a closure of the entire wastewater treatment system or if only certain components are to be closed; and if the closure plan is intended to be a clean-out plan rather than a complete closure of the system (for example, if the system is being cleaned out for resale to another owner). Attach additional sheets as necessary.

Appendix A
See Item 21 above.

ATTACHMENT 3

Groundwater Monitoring Plan

Santee Cooper
Winyah Generating Station

Groundwater Monitoring Plan for NPDES Wells

Permit No. SC0022471

Environmental Services

DOCUMENT REVISION AND DISTRIBUTION	
Revision Date	**Description**
April 1994	Original groundwater sampling plan was created & approved by SCDHEC
Dec. 2010	Modified plan for general overall improvement and modernization and to implement low flow sampling techniques.

Manual Distribution List	
Environmental Management	1 Copy
Fossil & Hydro Generation- Technical Services	1 Copy
Winyah Generating Station	1 Copy
Santee Cooper Intranet	/Port Corporate Services Environmental Management Environmental Services

Santee Cooper - Winyah Generating Station

NPDES Permit # SC0022471

Groundwater Monitoring Plan

Table Of Contents

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

This Groundwater Monitoring Plan presents the details of the detection groundwater monitoring program for Winyah Generating Station. The goal of this plan is to install and operate a system where impact to groundwater would be detected and, if detected, to qualitatively identify the impacting parameters.

In April 1994, Santee Cooper submitted a groundwater monitoring plan for the Winyah Generating Station ash ponds. That plan was approved by the South Carolina Department of Health and Environmental Control and, as a result, was implemented in July 1994, with the installation of ten monitoring wells. Wells, WAP-1 through WAP-10 were installed around the perimeter of the facility to monitor the groundwater quality. In September 2009, SC DHEC approved a Site Assessment Work Plan for Winyah Generating Station which authorized the addition of one additional groundwater monitoring well. Figure 1 is a site location map for the facility and Figure 2 is a groundwater monitoring well location map.

The original plan required the use of submersible pumps which can cause disturbances during purging and sampling . Also, they are less easily controlled than adjustable rate submersible pumps or peristaltic pumps. This can lead to sampling results that are adversely affected by purging and sampling operations, and a higher degree of data variability. Therefore, this amended Groundwater Monitoring Plan specifies the method of groundwater sampling as a low flow sampling (LFS) system.

LFS is a technique to minimize the hydraulic stress on the aquifer during purging and sampling by using an adjustable rate pump to remove water from the screened zone at a rate that will cause minimal drawdown of the water level in the well. LFS is designed to

collect a sample that most truly represents the water in the screened section of the aquifer surrounding the monitor well, and not from the mixed water of a bailer. LFS can most often best represent the contamination or lack thereof in the aquifer because it was produced by a process that minimized stress on the aquifer or well. LFS reduces the physical and chemical stresses, reduces the variability in sample procedures, and reduces the chance that changes in chemical concentrations are induced by the sampling technique. This plan incorporates those changes in protocol.

2.0 FACILITY DESCRIPTION

Winyah Generating Station is located in Georgetown County, SC southwest of the City of Georgetown, as shown in Figure 1. Winyah Generating Station is a fossil fuel fired electric generating facility primarily using coal combustion converting heat energy to electricity which occupies approximately 2,650 acres. The facility also uses No. 2 fuel oil principally for start up operations. Basically, the station consists of a coal storage area and handling system, four utility boilers each with a steam turbine and generator.

Santee Cooper's Winyah Generating Station consists of four subcritical coal-fired units. Winyah Unit 1 began commercial operation in 1975, Unit 2 in 1977, Unit 3 in 1980, and Unit 4 in 1981. The ash management facilities include Ash Ponds A and B, South Ash Pond and West Ash Pond. The original ash management areas (Ash Pond A and Ash Pond B) were constructed in 1975 by Burns & Roe. Two additional ash management areas were constructed in 1980 (South and West Ash Ponds). The Station also has two ponds, the West Slurry Pond and Unit 2 Slurry Pond, which were previously used for management of flue gas desulphurization (FGD) sludge. Improvements to the station's FGD systems have enabled the plant to make high-quality, saleable gypsum, nearly all of which is directed to a facility to make gypsum board. As a result, the two slurry ponds are

currently used primarily for blow down and wash water; little FGD sludge is currently directed to these ponds. Any bottom and fly ash which is not recycled or reused is managed on site in the ash management areas. Figure 2 is a map indicating the location of each monitoring well and the specific impoundments.

In 1994, groundwater monitoring wells were installed around the ash management areas at Winyah Generating Station and have been monitored semi-annually with the results reported to South Carolina Department of Health and Environmental Control (SCDHEC). Monitoring well water level data show groundwater flows in a northerly direction towards Pennyroyal Creek and Turkey Creek. Of the 10 monitoring wells, analytical results from eight have consistently been below the maximum contaminant level (MCL) for total arsenic (0.010ppm), and two have shown arsenic between 0.002 and 0.468 ppm. No other metals which are monitored are above their respective MCL.

3.0 GEOLOGIC CONDITIONS AND TOPOGRAPHY

Regional and Site Geology and Hydrogeology

WGS lies on the southern Atlantic Coastal Plain. This area is underlain by unconsolidated sediments ranging in age from the Cretaceous to Recent. The unconsolidated material is estimated to be in excess of 1,000 feet deep.

The site lies in the Lower Coastal Plan Physiographic Province of South Carolina. The subject area is composed of unconsolidated and lithified strata, sedimentary in nature over a basement of igneous and metamorphic rocks. The depth to the basement complex is expected to be approximately 2,000 feet. Overlying this complex, in ascending order are the Cretaceous Middendorf Formation, the Black Creek Formation, the Pee Dee Formation and the Pleistocene Pamlico Formation. A veneer of surface sediments across the site appears to be Recent in age consisting of silty sands with organics and are typical of

alluvial deposition. Extensive earthwork across the site such as road and dike building, and foundation preparation has altered much of the original grade in the direct vicinity of the Station.

With regard to the monitoring plan, the Pamlico Formation (previously identified as the Rheems Unit) is the formation of principal interest. All monitoring wells have their screens set into this formation. Based on well installation data, this formation is consistent across the entire site. The formation consists principally of trace to moderate amounts of silt and clay with the bulk of material being sand. A significant amount of geotechnical and assessment work has also been performed at the site. In an assessment report dated February 15, 1995 (Site Assessment Report for WGS, Georgetown, SC GWPD Site ID # A-22-AA-16289, Halliburton NUS Corporation, February 1995), analysis of the soil sample collected via Shelby tube yielded the following results:

1.	Total Porosity	n = 28.5%
2.	Sand Content	91%
3.	Silt and Clay Content	9%
4.	Vertical Hydraulic Conductivity	Kv = 1.44 x 10E-6 cm/sec
5.	Uniformity Coefficient	Cu = 2.5

Halliburton NUS concluded this data is consistent with the Pamlico Formation. Also, the Halliburton study included temporary monitoring wells (Geoprobe) and 4 permanent monitoring wells with yielded geological data consistent with the NPDES wells.

The surface of the site and surrounding area is relatively flat, between 15 and 30 feet msl. The lower areas are typically marshy year round. Slightly higher elevations can vary seasonally and with rainfall. This upper 40 feet of sediments at WGS are primarily sands

interbedded with thin clay seams. The lower ten feet of this interval was apparently deposited in a lagoon with numerous shells as well as clayey sands and two thin clay seams.

Beneath the upper sand layer is dense, low-permeability, gray calcareous clay containing trace sands. This material is known as the Black Mingo formation. It is approximately 50 feet thick and is persistent across the site. This formation has the potential to retard vertical migration of groundwater.

Subsurface borings were drilled at WGS during various construction phases and confirmed uniform subsurface conditions are present. Borings installed in the spring of 1970, before any generating units were constructed, indicate groundwater elevations were on average 1 to 2 feet below grade. The movement of groundwater is towards the north discharging into Pennyroyal and Turkey Creeks and eventually into the Sampit River.

Surface Hydrology

The Sampit River is the main estuary in the vicinity of Winyah Generating Station and is located approximately two miles north of the Site. It flows in an easterly direction and discharges into Winyah Bay. The river is influenced by the bay tides at least as far inland as the plant site. Generally the Sampit River is saline. Pennyroyal Creek is a tributary to the Sampit River. It borders the western boundary of the plant property and flows in a northeasterly direction. Another tributary, Turkey Creek, located north and east of the station flows north and joins Pennyroyal Creek about one mile north of the Winyah Generating Station property line and one-half mile south of the confluence with the Sampit River. In the past, a portion of Turkey Creek was relocated to a man made channel along the east side of the Industrial Cooling Pond.

Site topography controls overland flow direction. Nearly all surface water on the plant site is collected and directed to the industrial cooling pond for reuse at the station creating a closed-loop system for process and cooling water.

4.0 GROUNDWATER MONITORING

At this facility, groundwater detection monitoring is performed semi-annually as set forth in the NPDES permit. This monitoring will be performed to determine if the ponds are affecting the quality of the groundwater. The permit requires Santee Cooper to maintain a groundwater detection monitoring system and conduct semi-annual sampling and analysis over the life of the facility, and it's post closure period.

4.1 GROUNDWATER MONITORING SYSTEM

In July 1994, ten groundwater monitoring wells were installed in accordance with South Carolina Well Standards and Regulations by GZA Drilling, Inc., a South Carolina certified well drilling consulting company. Using hollow stem augers approximately 8.0 inches in diameter, borings were drilled to each wells target depths (24 to 35 feet below grade). Upon termination of the boring, the wells were completed using threaded PVC casing 2 inches in diameter, a PVC screen 2 inches in diameter, and an artificial gravel pack of silica sand, and pelletized bentonite seal. Neat cement was used as the grout to surface, and a locking steel protective cover with appropriate groundwater monitoring well placard, and steel protective posts were installed.

All wells were surveyed by a State of SC Licensed surveyor for elevation and location. Then all the groundwater monitoring wells were resurveyed in December 2009 following the installation of WAP-11, the additional groundwater monitoring well approved in the September 2009 Site Assessment Work Plan for Winyah Generating Station.

4.2 GROUNDWATER SAMPLING

Groundwater samples will be collected every six months from these wells and any future wells deemed necessary by Santee Cooper or SCDHEC to uphold the intent of the permit. The groundwater samples will be analyzed for the parameters listed below.

Parameter

pH (field), standard units[1]
Specific Conductance (field)[1]
Water level (tenth/feet) (field)[1]
Aluminum[2]
Arsenic, Total, ug/l[1]
Barium[2]
Cadmium, Total mg/l[1]
Calcium[2]
Chromium[1]
Copper[2]
Iron[2]
Lead[2]
Magnesium[2]
Selenium[2]
Zinc[2]
Sulfate, mg/l[2]
Chloride, Total mg/l[2]
Total Dissolved Solids, mg/l[1]
Temperature (degrees Celsius) (field)[2]
Turbidity (NTU) (field)[2]
Redox Potential (ORP) (mVolts) (field)[2]

[1] *Sampling and analyses of these parameters in required per the facility's NPDES permit.*
[2] *Sampling and analyses of these parameters in required per the Site Assessment Work Plan approved by SC DHEC on September 21, 2009.*

As part of the groundwater quality monitoring activities, groundwater level measurements will be obtained from each of the monitoring wells at the start of every sampling event, and

the Total Depth (TD) interval of each well will be measured annually. This data will be reviewed to evaluate the groundwater flow patterns in the vicinity of the site to ensure and confirm that the system is performing as designed.

4.3 GROUNDWATER LEVEL MEASUREMENT

The groundwater well level will be measured with a water level indicator that is able to read to the nearest hundredth of a foot. The reading is taken from the top of the polyvinyl chloride (PVC) casing to the groundwater surface and recorded. To deter cross contamination, the water level indicator is decontaminated between wells. Decontamination consists of an initial wash with laboratory grade soap, rinse with demineralized water, isopropyl alcohol rinse, and final rinse with demineralized water. Nitrile disposal gloves are worn by sampling personnel at all times and changed whenever necessary, including the minimum of between each well, to further minimize cross contamination.

4.4 MONITORING WELL PURGING

Dedicated sample tubing will be lowered into the well and set to the midpoint of the screened interval, but at least 2 feet above the bottom of the well to minimize the mobilization of particulates at the bottom of the well. Dedicated sample tubing will be utilized to the pump head connection of the peristaltic pump to minimize the potential for cross contamination. The pump will be started at its lowest speed setting and slowly increased until discharge occurs. The pump speed will be adjusted until there is no water level drawdown (less than 0.3 ft). Note, the speed and drawdown will need to be monitored and may need to be adjusted after initial drawdown and recovery. During well purging, the indicator field parameters (turbidity, temperature, specific conductivity, pH, and Eh) will be monitored every 3 to five minutes (or less if appropriate). Purging is considered complete and sampling may begin when all the field parameters have stabilized.

Stabilization is considered to have been achieved when three, consecutive readings, taken 3 to 5 minutes apart, are within acceptable limits.

4.5 FIELD DATA COLLECTION

Specific conductivity (SC), pH, temperature, turbidity, and ORP/Eh are the indicator field measurements which will be collected using an appropriate analyzer. The analyzer(s) will be calibrated daily per manufacture's operating instruction. Purging will continue until these parameters are stabilized. A sample for readings will be collected every 3 to five minutes. A and a stabilized reading, which is to be achieved prior to collection of the groundwater sample, is specified as three consecutive readings for each parameter, which do not vary more than 3 percent for SC, 0.1 for pH, 3 percent for temperature, 10 percent for turbidity, and 10 millivolts for ORP/Eh. Once the readings for these parameters have been stabilized, then a groundwater sample may be collected from the well and placed in the appropriate, laboratory supplied container.

4.6 GROUNDWATER SAMPLE COLLECTION

When the appropriate volume has been removed, ie, field measurement parameters have stabilized, samples are collected and stored in the designated laboratory sample bottles, and placed in an ice-filled cooler for transport to Santee Cooper's Water Quality lab, Analytical and Biological Services. The applicable analysis is either run at ABS or sent to a contracted lab who is a SCDHEC certified laboratory. A chain of custody will be completed, which tracks the samples through the collection and analytical process.

Optionally, at the time of groundwater sampling, if the sampling apparatus is inoperable for an individual well, Santee Cooper may resort to traditional bailing and purging of the wells in an effort to provide a synoptic round of groundwater samples from the site. At least three well volumes will be removed with monitoring of the field parameters until they are

stable. If this method is used, and the turbidity of the sample is greater than 50 NTU, a disposable polycarbonate filters (.45 micron) will be used to filter the groundwater sample.

4.7 DATA EVALUATION AND REPORTING

The data from the semi-annual detection groundwater sampling events will be evaluated and compared to historic data and the Federal Drinking Water Regulations for Maximum Contaminate Levels (MCL). The groundwater flow rate and direction will also be evaluated by a groundwater professional as part of the groundwater monitoring requirements.

In accordance with the NPDES permit, the groundwater monitoring results shall be submitted semiannually and postmarked no later the 28th of the month following the end of the monitoring period. One original and one copy of the reports shall be submitted to SCDHEC's Bureau of Water and another copy of the reports shall be submitted to SCDHEC's Site Assessment, Remediation, & Revitalization Division.

4.8 FACILITY CONTACT

For the Groundwater Monitoring Plan, the appropriate contact for this facility is:

Santee Cooper
(South Carolina Public Service Authority)
Winyah Generating Station
One Riverwood Drive
Moncks Corner, SC 29461-01

Attn: Manager, Environmental Management
(843) 761-5183

Table

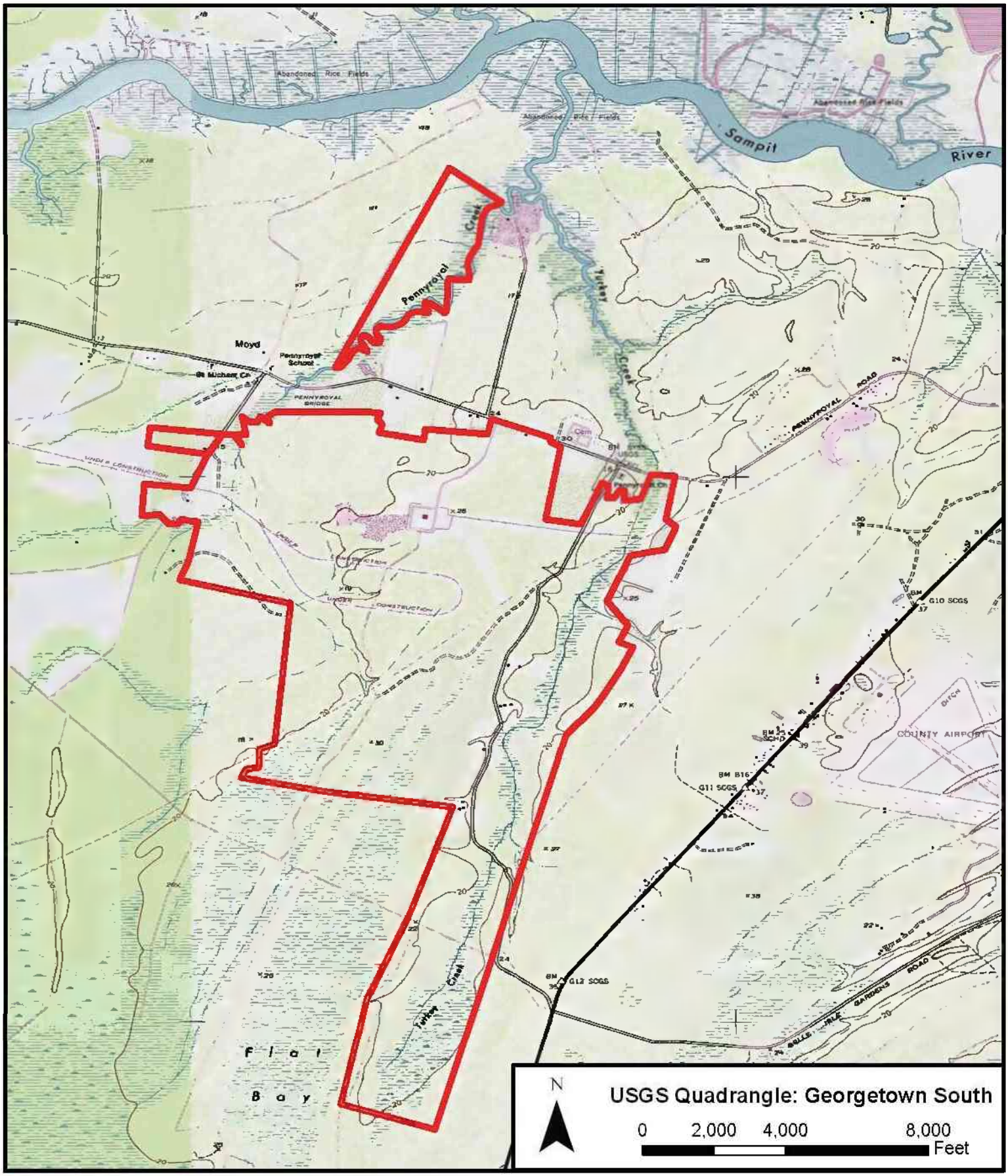
Table 1 Summary of Monitoring Well Construction

WGS NPDES Groundwater Monitoring Wells

Groundwater Monitoring Well Designation	North NAD 83/07	East NAD 83/07	Top of PVC Casing (ft, msl)	Top of Protective Casing (ft, msl)	Pad Elevation (ft, msl)	Well Depth Elevation (ft, msl)	Depth of Casing (ft, bgs)	Screen Intervals (ft, bgs)	Sand **(ft, bgs)**	Bentonite (ft, bgs)	Grout (ft, bgs)	Date Constructed By
WAP - 1	543682.98000	2500771.17000	29.44	29.78	27.05	3.05	24	4- 24	3.5- 24	3- 3.5	0- 3	1994-07-01 GZA Drilling
WAP - 2	546076.18000	2500550.38000	23.69	24.02	21.29	-2.71	24	4- 24	3.5- 24	3- 3.5	0- 3	1994-07-01 GZA Drilling
WAP - 3R	547337.61000	2498641.84000	19.43	19.74	16.92	-5.08	22	2-22	1.5-22	1-1.5	0-1	1999-05-18 Carolina Drilling
WAP - 4R	551258.70000	2499390.74000	20.34	N/A	18.14	-6.86	25	5-25	3.0-25.0	1.0-3.0	0-1.0	2008-12-10 B. Thomas
WAP - 5	549746.57000	2501038.82000	26.25	26.85	23.82	-11.18	35	15- 35	13- 35	12- 13	0- 12	1994-07-05 GZA Drilling
WAP - 6	550258.33000	2504762.25000	30.98	31.34	30.32	6.32	24	4- 24	3.5- 24	3.5- 3.5	0- 3.5	1994-06-30 GZA Drilling
WAP - 7R	548645.69000	2503769.82000	29.94	30.31	27.76	2.76	25	5-25	3.0-25.0	1.0-3.0	0-1.0	2008-12-10 B. Thomas
WAP - 8	548522.92000	2503258.79000	30.38	30.76	27.59	3.59	24	4- 24	3.5- 24	3- 3.5	0- 3	1994-06-30 GZA Drilling
WAP - 9	546463.36000	2503078.04000	26.18	26.86	23.5	-0.5	24	4- 24	3.5- 24	3- 3.5	0- 3	1994-06-29 GZA Drilling
WAP - 10	544711.40000	2503434.74000	26.11	26.71	23.47	-0.53	24	4- 24	3.5-24	3- 3.5	0- 3	1994-06-29 GZA Drilling
WAP- 11	548834.92	2497551.47	9.55	9.89	6.71	-8.29	15	5- 15'	3- 15'	2- 3'	0- 2	2009-11-19 J. Burr
PZ - 1	544623.20000	2501493.26000	31.25	31.71	27.92	-2.08	30	20- 30	18- 30	2- 18'	0-2	2009-11-19 J.Burr
PW - 1	548834.50000	2497552.02000	6.76	26.36	25.31							

Notes:
msl - mean sea level
bgs - below ground surface
bTOC - below Top of Casing
Vertical Datum NAVD88

Figures



KESTREL HORIZONS

Figure 1
Santee-Cooper Winyah Generating Station Location Map

Georgetown County, South Carolina

Drawn By: AMF
Checked By: DGN
Project #: 1089-005.01
Date Created: 04/21/2009
Source: ESRI


WAP-4
W-SW-WSP
WAP-6
WAP-5
WAP-11
W-SW-TC
WAP-7R
W-SW-ICP
WAP-8
WAP-3
Ash Pond
WAP-2
WAP-9
PZ-1
WAP-10
W-SW-APB
WAP-1
Winyah Generating Station Groundwater Monitoring
N
Existing Well
2009 Well
2009 Piezometer
Staff Guage
1 inch = 1,500 feet
0 500 1,000 2,000 3,000
Feet