

FEDEX OVERNIGHT

January 15, 2014

Jeffrey P. deBessonnet
Director, Water Facilities Permitting Division
SCDHEC
2600 Bull Street
Columbia, SC 29201

Re: Grainger Generating Station Amended Closure Plan – Ash Ponds
SC0001104

Dear Mr. deBessonnet:

By letter dated, November 25, 2013, Santee Cooper committed to submit the attached Amended Closure Plan for the Grainger Generating Station ash ponds for review and approval by the Department. The overall plan is comprehensive and complies with DHEC Regulations 61-67 and 61-82 with the goal of removing the ash offsite for beneficial use and ultimate closeout of the wastewater ponds to be protective of human health and the environment.

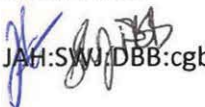
Offsite removal of the estimated 1,300,000 cubic yards of solids is expected to take from six (6) to ten (10) years. However, Santee Cooper will make good faith efforts to complete the removal of ash by December 31, 2020. With submission of this plan and in order to meet this timeline, Santee Cooper intends to commence with the excavation and offsite removal of the ash for beneficial use. This initial routine activity is identical to work performed while the Grainger Generating Station was operational.

While a large portion of the initial work outlined in the closure plan is routine in nature, other portions of the plan require in-depth review and approval by the Department. Please contact Ms. Susan Jackson, PE, at 843-761-8000, ext. 5664 with any questions or comments.

Sincerely,


T.L. Kierspe
VP, Environment, Property and Water System Management

Attachment


JAF:SWJ, DBB:cgb

Jeffrey P. deBessonet
SCDHEC
January 15, 2014
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ecc: w/Attachment

Frank S. Holleman, III, SELC
Ms. Crystal Rippy
Mr. Chris Forrest
Mr. Keith Collinsworth



Prepared for

Santee Cooper
One Riverwood Drive
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AMENDED CLOSURE PLAN WASTEWATER ASH PONDS GRAINGER GENERATING STATION CONWAY, SOUTH CAROLINA

Prepared by

Geosyntec 
consultants

engineers | scientists | innovators

104 South Main Street, Suite 115
Greenville, South Carolina 29601

January 2014



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LIST OF ATTACHMENTS

Attachment 1:	DHEC Form 1795
Attachment 2:	Groundwater Monitoring Plan
Attachment 3:	November 25, 2013 Letter to DHEC

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LIST OF ACRONYMS

BMP	Best Management Practices
BOW	Bureau of Water
CPT	Cone Penetration Test
CSM	Conceptual Site Model
DHEC	South Carolina Department of Health and Environmental Control
EQC	Environmental Quality Control
GGG	Grainger Generating Station
MSL	Mean Sea Level
NPDES	National Pollutant Discharge Elimination System
SPT	Standard Penetration Test
SWPPP	Stormwater Pollution Prevention Plan
TCLP	Toxicity Characteristic Leaching Procedure
TR	Travel Route
USACE	United States Army Corps of Engineers
WR	Water Route
WWTS	Wastewater Treatment System

1. INTRODUCTION

1.1 Site Background

The Grainger Generating Station (GGS or the Site) is an electric-generating facility owned by Santee Cooper. The 833-acre facility is located in Conway, South Carolina, along US Highway 501, which bisects the Site into western and eastern portions (See Drawing 1). An approximately 300-acre cooling pond (Cooling Pond) is located to the west of US Highway 501 and two closed 85-megawatt subcritical coal-fired units are located on the eastern side. The eastern portion of the GGS is bordered to the east and south by the south-flowing Waccamaw River and to the northeast and north by the City of Conway.

During operation of the two coal-fired units, before they were retired in 2012, wastewater containing fly ash and bottom ash (“ash”), was treated in two ash ponds that are part of the Site’s Wastewater Treatment System (WWTS). Ash Pond 1, constructed in 1966, occupies approximately 41 acres and Ash Pond 2, constructed in 1977, occupies approximately 39 acres. Drawing 2 shows the locations of the ponds.

Included in wastewater that is treated in the ash ponds is industrial stormwater runoff. The WWTS continues to be operated in accordance with the permit issued for this system under the South Carolina Pollution Control Act and the National Pollutant Discharge Elimination System (NPDES) Permit for Discharge to Surface Waters (Permit Number SC0001104). This permit is referred to in this Plan as the “Industrial Wastewater Permit”. Santee Cooper intends to close the two ash ponds in accordance with this Plan.

Santee Cooper engaged a third party consultant (ARCADIS) to evaluate eight (8) closure alternatives, and the results of this evaluation were summarized in a report entitled “*Conceptual Site Model and Evaluation of Alternatives for Closeout of Wastewater Ash Ponds – Closeout Plan Phase 1*,” dated 17 March 2013 (herein referred to as the “Alternatives Report”). For the purpose of this Plan, the terms “closeout” and “closure” are used interchangeably. The Alternatives Report examined site data collected during field activities in December 2011, October and November 2012. Site conditions related to geology, hydrogeology, and other surface and subsurface features were examined.

The cumulative results of this data collection and analysis were used to develop a Conceptual Site Model (CSM). The CSM also incorporated regional data available at the time of its development. The CSM was then used to analyze different closure scenarios and compare their ability to satisfy five (5) criteria that were developed to provide a methodology for selecting an appropriate method of closure. Eight (8) alternatives were identified and evaluated in light of the five (5) following criteria:

- Closure Objectives: whether each alternative met the Closure Objectives (defined with reference to compliance with applicable regulations and guidance).
- Effectiveness: the permanence of each alternative in meeting the Closure Objectives, including resistance to extreme weather and seismic events.
- Sustainability: each alternative's effects on public health, environment, and the local economy during implementation.
- Implementability: technical feasibility or whether each alternative could be implemented, and is a commercially available and proven closure alternative.
- Cost: including consideration of capital cost and long-term operation costs.

Based on the Alternatives Report, Santee Cooper submitted a proposed closure via capping ash in place with lateral impermeable isolation and footprint reduction, which was referred to as Alternative 5b. However, Santee Cooper has amended its Closure Plan and is now recommending closure via removal of ash and transport offsite (Alternative 7) with an emphasis on beneficial use (e.g., ash sale to a suitable end-user).

The change in the recommended closure alternative was noted in Santee Cooper's November 25, 2013 letter (Attachment 3) to the South Carolina Department of Health and Environmental Control (DHEC). This *Amended Closure Plan* ("Plan") has been prepared in accordance with DHEC Regulation 61-82 – Proper Closeout of Wastewater Treatment Facilities. The selected method of closure in this Plan is a minor modification to Alternative 7. This Plan is focused on solutions through beneficial use that are cost-effective and beneficial to the environment and the economy. To facilitate beneficial use, ash removed from the ponds will be dewatered. Dewatering of the ash

will also provide a secondary benefit of reducing truck traffic by eliminating the need to import stabilization or solidification agents.

No later than December 31, 2023, Santee Cooper will complete excavation of ash from Ponds 1 and 2 and one foot of underlying soil beneath the ash, and will remove all the excavated ash and soil from the Site to be beneficially used or placed in a Class 3 or better landfill. Santee Cooper will make good faith efforts to complete the excavation and removal of ash and soil from the Site by December 31, 2020.

1.2 Purpose and Scope of Plan

The purpose of this Plan is to provide conceptual-level details on how closure will be performed. Further this Plan relies upon information obtained from previous investigations at the Site relevant for consideration of the proposed closure method. In preparation of this Plan, Geosyntec has relied primarily on previously-collected information.

1.3 Plan Organization

The remainder of this Plan is organized as follows:

- The regulatory framework for closure of the GGS ash ponds is presented in Section 2;
- Site characteristics relevant for the proposed closure, including Site topography, hydrology, hydrogeology, and subsurface conditions, which were previously set forth in the Alternatives Report and the Ash Pond 1 Geotechnical Report are noted in Section 3;
- Details of the conceptual closure Plan are presented in Section 4;
- Summary of the Plan is included in Section 5; and,
- References are provided in Section 6.

2. REGULATORY FRAMEWORK

2.1 Overview

The ash ponds, and water discharges from the ash 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. SC0001104, 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,
- (iii.) DHEC-published guidance entitled “Closeout of Wastewater Treatment Systems” dated October 2009.

Stormwater discharges from industrial activities not discharging to outfalls covered under Permit No. SC0001104 are subject to the conditions of the NPDES General Permit for Storm Water Discharges Associated with Industrial Activities, Permit No. SCR000000 (approval No. SCR004149) (herein referred to as the “Industrial Stormwater Permit”).

GGs will continue to comply with applicable requirements of these permits and regulations throughout the proposed closure. It should be noted that the removal of approximately 900,000 cubic yards and 400,000 cubic yards of solids from Ash Pond 1 and Ash Pond 2, respectively, is expected to be performed during a six (6) to ten (10) year period. This Plan is intended to provide a general overview of the project planning and timetable looking forward throughout closure implementation. This Plan is not intended to present or propose specific wastewater management plans or system/permit modifications.

2.2 Industrial Wastewater Permit

A renewed Industrial Wastewater Permit was issued on December 30, 2012, with an effective date of February 1, 2014 and an expiration date of January 31, 2019. With the cessation of electric generating activities, the wastewater discharge from Outfall 001 consists of stormwater, coal pile runoff, and a small amount of intermittent runoff from service wash water. This Plan does not involve Outfall 002 located on the Cooling Pond.

The Site will continue to “properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions” of the Industrial Wastewater Permit until closure is complete. When closure is complete, the Industrial Wastewater Permit will be modified or terminated, as appropriate.

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. 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. As noted, activities to remove ash from the ash ponds are anticipated to occur over six (6) to ten (10) years during which the Industrial Wastewater Permit will remain active. The description of the closure process (i.e., applicable regulations) 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 in order to meet the objective of preventing health hazards and promoting safety in and around the Site.

2.5 DHEC Wastewater Treatment Systems Closure Guidance

DHEC 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.

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 a completed DHEC Form 1795 “Industrial Wastewater Facility Closure Form” along with an 8 ½” x 11” location map (located in Attachment 1); and,
- A groundwater monitoring plan (located in Attachment 2).

This Plan includes a discussion of beneficial use for ash following its excavation from ash ponds and proper disposal methods to the extent that any ash removed from the ponds is discarded. Upon approval of this Plan, closure activities may be implemented at the Site. 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. All applicable permits for stormwater will be complied with in the closure of the ash ponds.

3. SITE CHARACTERISTICS

3.1 Overview

Section 3 summarizes site characteristics, including topography, hydrology, hydrogeology, and subsurface conditions, that are relevant for this proposed closure. Regional geology and information regarding surficial soil classification may be found in the previously-submitted Alternatives Report. The information presented is largely reiterated from the Alternatives Report, with appropriate updates as needed to more fully explain the proposed closure Plan.

3.2 Site Topography

The average elevation of the native landscape varies from approximately 3.5 to 11 feet mean sea level (MSL). The greatest topographic relief occurs in areas of manmade changes to the topography. The perimeter dikes surrounding both Ash Pond 1 and Ash Pond 2 are several feet higher than the surrounding terrain at approximately 15 and 13 feet MSL, respectively. Site topography is illustrated on Drawing 3.

3.3 Site Hydrology

The area proximate to the Site has the following primary surface water features: Waccamaw River, Cooling Pond, Intake Canal, and Drainage Ditch (see Drawing 2). More detailed information on site hydrology is presented in Section 3 of the Alternatives Report.

3.4 Site Hydrogeology

As further detailed in the Alternatives Report, the hydrogeology of the region is characterized by the upper and lower Socastee Formation with the Bear Bluff Formation representing the confining base of the groundwater flow zone. The lower Socastee will be the primary groundwater flow zone due to the higher hydraulic conductivity of its sand versus the upper Socastee's lower hydraulic conductivity of the interbedded sand, silt, and clay. The groundwater beneath the Site flows dominantly northwest to southeast beneath Ash Pond 1, with some component of radial flow, while groundwater flow beneath Ash Pond 2 is dominantly radial. Potentiometric monitoring results will continue to be obtained in accordance with the Site's groundwater monitoring plan

throughout closure implementation and two (2) years after removal of ash and underlying soil described in Section 4.

3.5 Subsurface Conditions and Geotechnical Properties

This section presents a summary of subsurface conditions for Ash Pond 1. This subsurface stratigraphy section is primarily based on existing information obtained from the report entitled “*Final Geotechnical Data Report*” [S&ME, 2012] (“herein referred to as the “Ash Pond 1 Geotechnical Report”).

Information from the Ash Pond 1 Geotechnical Report indicates that the subsurface soils primarily consist of three general strata. A brief description of each unit is presented as follows:

- Stratum I: Materials within Stratum I consists predominantly of ash. The ash material is located approximately between elevations 0.5 to 23.5 feet below surface of the pond.
- Stratum II: Soils consist of an upper stratum of lean and fat sandy clays, silts, poorly graded sands, silty sands, and clayey sands of the Pleistocene age Socastee Formation to depths ranging from 18 to 33 feet below surface of the pond.
- Stratum III (Bear Bluff Formation): Ash Pond 1 Geotechnical Report referred to Stratum III as the Pee Dee Formation while the Alternatives Report referred to the same depths as the Bear Bluff Formation. However, both reports describe soils consisting of stiff to very hard clays and silts that were encountered at depths from approximately 15 to 25 feet below surface of the pond. The clay unit was not fully penetrated during previous investigations but historical borings indicate that the underlying clay formation is at least 35 feet thick.

3.6 Ash

As noted in Section 3.5 above, Stratum I (approximately 0.5 foot to 23.5 feet below ground surface) consists primarily of ash. The ash impounded within the ash ponds consists of fly ash and bottom ash from coal combustion settled out of industrial wastewater. Santee Cooper continues to evaluate the suitability of use and recycling ash from the Site. In the event that the ash is not deemed appropriate for beneficial use or a

suitable end-user is not identified, the ash will be disposed of in an appropriate disposal facility. Previous evaluation of ash, produced company-wide by Santee Cooper, indicate disposal in Class Three Landfills is suitable.

4. CONCEPTUAL CLOSURE PLAN

4.1 Closure Overview

As discussed earlier, the proposed method of closure is Alternative 7, as presented in the Alternatives Report, with minor modification to allow for the beneficial use of the ash, as appropriate, to enhance the sustainability evaluation criterion and lower the cost of closure. In order to increase the suitability of the ash for beneficial use and transport, dewatering of excavated ash is expected. This will also provide a secondary benefit of reducing truck traffic by eliminating the need to import stabilization or solidification agents.

This Plan includes over-excavating one (1) foot below the ash-natural soil interface. Excavated materials will be transported offsite for beneficial use or to an authorized disposal facility if beneficial use is not available. By removing this 1-ft thick layer from beneath the ash, the Site will be suitable for the establishment of wetlands within the footprints of former ash ponds. The proposed closure method provides for the protection of human health and the environment since ash will be removed from the Site.

Wetlands will be established in the areas previously occupied by the ash ponds upon appropriate approvals. Although the perimeter berm alongside the intake canal may be lowered or removed to match the surrounding topography, this Plan also proposes to breach the perimeter dike at one or more locations to accomplish linkage with the surrounding areas. No later than December 31, 2023, Santee Cooper will complete excavating ash from Ponds 1 and 2 and one foot of underlying soil beneath the ash and will remove all the excavated ash and soil from the Site to be beneficially used or placed in a Class 3 or better landfill. Santee Cooper will make good faith efforts to complete the excavation and removal of ash and soil from the Site by December 31, 2020. During excavation activities, Santee Cooper proposes to provide status reports to DHEC every six (6) months regarding the amount of ash and underlying soil removed from GGS.

The closure will be done in a phased approach (see Section 4.3.4). Therefore, some areas of the Site are expected to be completed sooner than others. The closure phasing shown on Drawing 4 takes into consideration neighboring community aesthetics. The following sections discuss the proposed closure in further detail.

4.2 Plan Assumptions

The following assumptions are largely reiterated from the Alternatives Report, with appropriate updates as needed to more fully explain the proposed closure Plan.

- The combined area of Ash Ponds 1 and 2 is approximately 80 acres; Ash Pond 1 and Ash Pond 2 are 41 acres and 39 acres, respectively.
- The combined volume of ash to be removed from Ash Ponds 1 and 2 is estimated to be approximately 1,300,000 cubic yards (i.e., 900,000 cubic yards from Ash Pond 1, and 400,000 cubic yards from Ash Pond 2, respectively).
- Assuming an in-situ density of 80 pounds per cubic foot, the total weight of ash to be removed will be approximately 1,400,000 tons.
- Given the existing conditions of the railroad system leading to the Site, it is not considered to be a viable method of transporting materials to or from the Site.
- Materials not suitable for beneficial use will be disposed of in a suitable, DHEC-approved landfill.

4.3 Description of Activities

The closure activities anticipated to be performed as part of the Plan are described in the following sections; these activities may be grouped in the following categories:

1. Dewatering;
2. Excavating, mixing, screening, and loading of materials;
3. Transporting of materials on and offsite; and,
4. Establishing wetlands.

4.3.1 Dewatering

Currently, water from the ash ponds is discharged through the NPDES-permitted wastewater outfall (Outfall 001) at the southeast corner of Ash Pond 2 as shown on Drawing 6. Water is collected in a deep trench in the southwest corner of Ash Pond 1

and drained to a pump station (Pump Station 1) from which it is pumped to Ash Pond 2. Water from Ash Pond 2 flows to the southern portion of the pond and is then discharged to the Waccamaw River through Outfall 001, either by pumping or gravity flow as the water in this pond rises.

The proposed closure activities in Ash Pond 1 will be executed in approximately four general phases (see Drawing 4). A series of rim ditches and finger ditches (Water Route [WR] WR-3 and WR-4 on Drawing 6, respectively) will be excavated for surface water conveyance and to dewater ash prior to excavation; this water will be conveyed through a semi-permanent rim ditch (WR-3 on Drawing 6) to Pump Station 1 (WR-1 on Drawing 6). Temporary ditches and/or sumps and pumps will be used as necessary to convey the water to Pump Station 1. The water from this area will be pumped to a rim ditch then conveyed to the settling pond (WR-5 on Drawing 6) on the west side of Ash Pond 2, slightly north of the current discharge. During closure activities in Ash Pond 2, water will also collect in this settling pond with the use of rim ditches, finger ditches, and/or temporary sump pumps. The settling pond will settle out solids and liquids will be conveyed to the southern portion of Ash Pond 2, from where they will exit the Site via Outfall 001.

4.3.2 Excavating and Loading

Excavation of materials will be performed in the phases mentioned above and discussed further in Section 4.3.4; the phases presented on Drawing 4 are conceptual in nature and the limits may be modified according to field conditions during excavation.

A general sequencing of proposed excavation is presented on Drawing 5. The intent of Drawing 5 is to demonstrate general construction techniques for the rim and finger ditches proposed to manage water during closure activities. After the dry materials have been excavated, the ditches will be deepened to continue to dewater the ash. 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.

Prior to finalizing excavation activities, the limits of excavation will be determined. Santee Cooper will generate construction-level drawings showing the limits of excavation and excavation depths and slopes.

Once the materials have been excavated to the ash-natural soil interface, the elevation will be noted for as-built purposes and the excavation will proceed until one additional foot of materials beneath the ash-natural soil interface has been removed.

The amount of materials to be removed is currently estimated at approximately 1,500,000 tons, including an assumed over excavation of one foot. However, this amount will be reviewed and adjusted accordingly after the limit of excavation has been delineated. Debris from clearing and grubbing activities will be transported offsite for either disposal at an approved facility or beneficial use (e.g., chip and haul to coal pile at Santee Cooper's Winyah Generating Station), as appropriate.

The loading of the material for transport on to trucks will be done directly by the excavator or, should the material need to be staged for dewatering, blending, screening or other purposes, by a front end loader. The final depths of excavation for closure will be documented on an as-built drawing.

4.3.3 Transporting Materials Onsite and Offsite

Onsite transport will use existing roads as much as possible. Currently, the Site may be entered via the western entrance at the intersection of Marina Drive and Ash Pond Drive (Travel Route [TR]-1A on Drawing 4). Santee Cooper may dedicate the use of TR-1A to station decommissioning activities until the end of calendar year 2015. During this time, alternative route(s) may be required. Possible new entrance(s) (TR-1B and/or TR-1C) could provide access to/from Marina Drive. Internal temporary roads will be constructed as necessary. The location of TR-1B and/or TR-1C and associated roads may be modified to adapt to field conditions including decommissioning activities and the cell being involved with ash removal.

Beginning in January 2016, during the excavation of Ash Pond 1, trucks will enter the area at the southwest entrance (TR-2A on Drawing 4) and will proceed east on the existing onsite road; this onsite road will be used for exiting as well. Temporary roads will be constructed as necessary to reach the loading areas.

A similar approach is proposed during the excavation of Ash Pond 2, where the trucks will enter the site at the northwest entrance (TR-3 on Drawing 4) and proceed east on the road on top of the berm. Turning around in Ash Pond 2 will be accomplished by traveling the perimeter of Ash Pond 2 using either the exterior berm roads or the interior

dike roads. As proposed for Ash Pond 1, temporary roads will be constructed as necessary to reach the loading areas. A general view of these traffic features and routing are illustrated on Drawing 4.

To prevent offsite tracking, a stone construction entrance will be installed for sediment capture. Stones will be washed and replaced as necessary whenever the entrance fails to adequately reduce debris. Santee Cooper will work with local and/or Department of Transportation (DOT) officials to select the off-site truck traffic route(s).

Given the required construction schedule for ash removal, a number of trucks will be leaving the Site for the purpose of transporting excavated materials offsite. In addition, truck traffic will be affected by weather constraints, other field-specific activities and/or rate of production, and trucks transporting material to and from the Site for other activities.

4.3.4 Phasing

As discussed above, the closure of the ash ponds is proposed to be accomplished in phases as presented on Drawing 4. The phasing of this closure was influenced by existing features onsite such as roads, perimeter dikes, etc., which were considered to make the excavation and transport processes more efficient. However, since these phases are conceptual, they may be adjusted as conditions dictate. In addition, 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, ash from different locations within the ash ponds may be blended together in order to achieve a homogenous product capable of meeting end-use specifications.

This phased closure approach has been developed in order to allow discrete areas to be completed as soon as practical. The sequence of closure will take into consideration neighboring community aesthetics. After excavation has been completed and the area has been isolated from the rest of the excavation activities, wetlands establishment may commence.

4.3.5 Wetlands

As discussed previously, closure of the ash ponds will include establishment of wetlands within the ash pond footprints. The Waccamaw River floodplain adjacent to the Site is an existing fully functional riverine wetland system, and is comprised of expansive forested wetlands at or near average MSL, upland hammocks and oxbow lakes (formed by active channel migration and abandonment).

After excavating the ash, elevations in portions of the ash pond footprints will be brought up to surrounding grade (e.g., similar to forested wetlands), adding fill material as needed. While other areas will be further excavated to mimic features such as oxbow lakes similar to the natural geomorphology observed along the Waccamaw River (See Drawings 7 and 8). Suitable fill material may be used to amend existing soils and establish elevation grades similar to the adjacent forested wetlands. The goal of this conceptual plan is to establish habitat diversity consistent with the surrounding floodplain system.

The proposed wetlands strategy relies upon the maturation of planted vegetation into a forested wetland system mimicking the surrounding nearby wetlands. To accomplish this objective, planted vegetation will include a native assemblage of herbaceous and tree species adapted to various moisture regimes ranging from inundated wetlands to drier upland slopes. The herbaceous assemblage would provide initial site stabilization and establishment of habitat while the planted trees mature. Two possible seed mixes include: a wetland seed mix and a seed mix comprised of species adapted to transitional and upland areas. The wetland seed mix may be comprised of native coastal plain species adapted to saturated soil conditions. The transitional and upland seed mix may be comprised of native coastal plain riparian species adapted to seasonally wet and dry soil conditions. The tree species selected will be planted throughout the wetland based on occurrence by moisture regime in the neighboring wetland. Typically, bald cypress and sweet gum will be planted in the wettest areas, and blackgum, loblolly pine, red maple, and sweet gum in the transitional and upland areas.

As stated above, this Plan is intended to provide a conceptual overview of the proposed closure process; this Plan is not intended to present or propose specific plans or construction level design. The Plan anticipates utilizing work space limited to the current industrial footprint of the Site and it is not anticipated that encroachment into any nearby wetlands areas would be necessary.

4.3.6 Continued Site and Groundwater Monitoring

Following the completion of closure activities described above, postclosure monitoring of Ash Pond 1 and Ash Pond 2 will be initiated to include monitoring of groundwater as well as monitoring of the success of the wetlands establishment.

As described in Section 2 above, Santee Cooper will continue to comply with its Industrial Wastewater Permit requirements, which include effluent limitations and monitoring, etc. A copy of Site's groundwater monitoring plan is provided in Attachment 2 of this Plan. Groundwater sampling results will be obtained and reported semi-annually as required in Industrial Wastewater Permit #SCR0001104. Santee Cooper proposes to continue to use their current groundwater sampling plan at the Site for two years after the removal of ash in Ash Pond 1 and Ash Pond 2. After which all wells be properly abandoned. The groundwater monitoring plan will be updated as needed during closure.

Additionally, the wetlands are proposed to be monitored, once annually, for a period of two years after completion. Given the construction schedule, annual monitoring would be initiated sequentially as each portion of the ash ponds is established as wetlands. The wetland areas would be protected against unwarranted encroachments by posting of signs demarcating the areas as needed. Fencing of the wetlands is not proposed. Monitoring of the wetlands would include collection of data on the herbaceous and tree stratum at monumented locations. Each monitoring location will be used to assess tree survival, growth, recruitment and composition as well as herbaceous vegetation coverage and composition. Annual monitoring will identify controls of exotic and/or nuisance plants and animals, if needed. Additionally, qualitative site conditions throughout the wetlands will be observed during the monitoring period to further document the wetland system is developing toward its target goal (e.g., surrounding forested wetlands).

5. SUMMARY

The following presents a summary of this Plan:

- GGS is an electric-generating facility owned by Santee Cooper, which was decommissioned in 2012. DHEC Regulation 61-82 requires proper closure of the Site's two ash ponds.
- The Alternatives Report submitted to DHEC in March 2013 determined that Alternative 7, Complete Removal of Ash Pond Solids and Offsite Disposal, met the closure objectives, was effective, and was technically feasible.
- Alternative 7 is the selected option for closure. A modification to Alternative 7 allows for beneficial use of the ash, as appropriate. The closure plan for the ash ponds includes excavation of solids (including one (1) foot over-excavation of underlying soils), beneficial use or transportation to a DHEC-approved offsite disposal facility, and establishing the former ash ponds to wetlands.
- No later than December 31, 2023, Santee Cooper will excavate ash from Ponds 1 and 2 and one foot of underlying soil beneath the ash and will remove all the excavated ash and soil from the Site to be beneficially used or placed in a Class 3 or better landfill. Santee Cooper will make good faith efforts to complete the excavation and removal of ash and soil from the Site by December 31, 2020.
- The Site will continue to operate in accordance with the Industrial Wastewater Permit and Industrial Stormwater Permit throughout the proposed closure.
- Continuing monitoring activities will include wetlands monitoring and continuation of activities outlined in the Site's groundwater monitoring plan.

6. REFERENCES

ARCADIS. “Conceptual Site Model and Evaluation of Alternatives for Closeout of Wastewater Ash Ponds – Closeout Plan Phase 1.” 17 March 2013.

DHEC. “R. 61-67 Standards for Wastewater Facility Construction.” 24 May 2002.

DHEC. “R. 61-82 Proper Closeout of Wastewater Treatment Facilities.” 11 April 1980.

DHEC. “Closeout of Wastewater Treatment Systems.” October 2009.

Soil & Material Engineers, Inc. (S&ME). “Final Geotechnical Data Report. Grainger Station, Conway, South Carolina.” 5 March 2012.

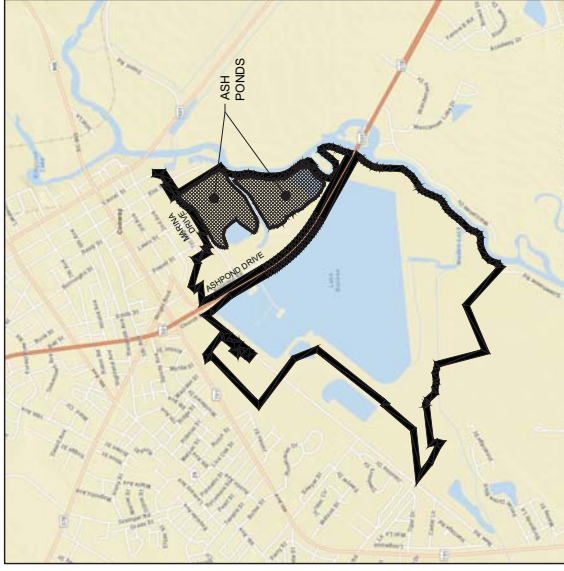
FIGURES

AMENDED CLOSURE PLAN WASTEWATER ASH PONDS DOLPHUS M. GRAINGER GENERATING STATION HORRY COUNTY, CONWAY, SOUTH CAROLINA

PROJECT NO. GSC5307
JANUARY 2014



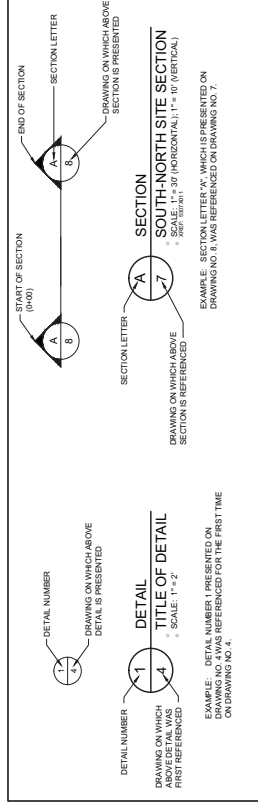
VICINITY MAP
SCALE IN MILES
0 1 2



LOCATION MAP
SCALE IN FEET
0 1500 3000

LIST OF DRAWINGS

DRAWING NO.	DRAWING TITLE
1	COVER SHEET
2	EXISTING CONDITIONS
3	BORINGS, PIEZOMETERS AND MONITORING WELL LOCATIONS
4	CONCEPTUAL CLOSURE PHASING
5	CONCEPTUAL GENERALIZED SITE SECTIONS
6	CONCEPTUAL WATER MANAGEMENT PLAN
7	CONCEPTUAL WETLANDS CREATION PLAN
8	CONCEPTUAL WETLANDS CREATION CROSS SECTIONS



DETAIL IDENTIFICATION LEGEND

PREPARED BY:



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PHONE: 864.438.4900

PREPARED FOR:



ONE RIVERWOOD DRIVE
MONCK'S CORNER, SOUTH CAROLINA 29461



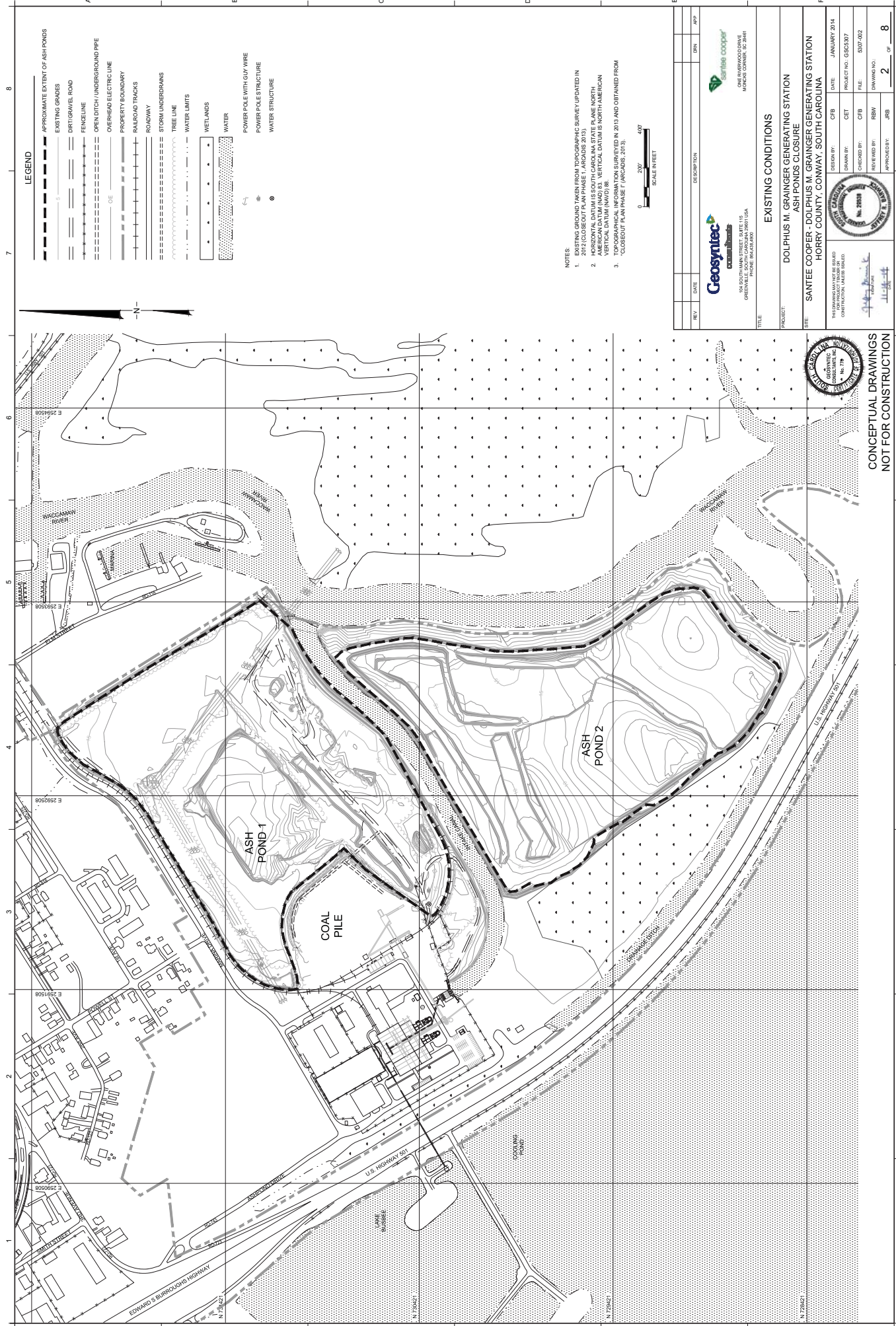
CONCEPTUAL DRAWINGS
NOT FOR CONSTRUCTION

REV.	DATE	DESCRIPTION	DRN.	APP.

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Santee Cooper
ONE RIVERWOOD DRIVE
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COVER SHEET
PROJECT: DOLPHUS M. GRAINGER GENERATING STATION
ASH PONDS CLOSURE
SITE: SANTEE COOPER - DOLPHUS M. GRAINGER GENERATING STATION
HORRY COUNTY, CONWAY, SOUTH CAROLINA

DATE: JANUARY 2014
PROJECT NO.: GSC5307
DRAWN BY: CET
CHECKED BY: CFB
REVIEWED BY: REV
APPROVED BY: JRB
DRAWING NO.: 1 of 8



LEGEND

[Symbol]	APPROXIMATE EXTENT OF ASH PONDS
[Symbol]	EXISTING GRACES
[Symbol]	DIRT/GRAVEL ROAD
[Symbol]	FENCELINE
[Symbol]	OPEN DITCH / UNDERGROUND PIPE
[Symbol]	OVERHEAD ELECTRIC LINE
[Symbol]	PROPERTY BOUNDARY
[Symbol]	RAILROAD TRACKS
[Symbol]	ROADWAY
[Symbol]	STORM UNDERDRAINS
[Symbol]	TREE LINE
[Symbol]	WATER LIMITS
[Symbol]	WETLANDS
[Symbol]	WATER
[Symbol]	POWER POLE WITH GUY WIRE
[Symbol]	POWER POLE STRUCTURE
[Symbol]	WATER STRUCTURE

- NOTES**
- EXISTING GROUND TAKEN FROM TOPOGRAPHIC SURVEY (UPDATED IN 2012) (CLOSEOUT PLAN PHASE 1, AROUND 2013).
 - VERTICAL DATUM (MVD) IS NORTH AMERICAN DATUM (NAD) 83. VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM (MVD) 88.
 - TOPOGRAPHICAL INFORMATION SURVEYED IN 2013 AND OBTAINED FROM CLOSEOUT PLAN PHASE 1, (AROUND 2013).



REV	DATE	DESCRIPTION	DWG	APP

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CONSULTANTS

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Santees Cooper
ONE BRIDGECORNER
WORKS CORNER SC 29615

EXISTING CONDITIONS

PROJECT: DOLPHUS M. GRAINGER GENERATING STATION
ASH PONDS CLOSURE

SITE: SANTEE COOPER - DOLPHUS M. GRAINGER GENERATING STATION
HORRY COUNTY, CONWAY, SOUTH CAROLINA

DESIGN BY:	CFB	DATE:	JANUARY 2014
DRAWN BY:	CFB	PROJECT NO.:	GS03307
CHECKED BY:	CFB	FILE:	5307-002
REVIEWED BY:	REV	DRAWING NO.:	
APPROVED BY:	JRB		

2 of 8

**CONCEPTUAL DRAWINGS
NOT FOR CONSTRUCTION**

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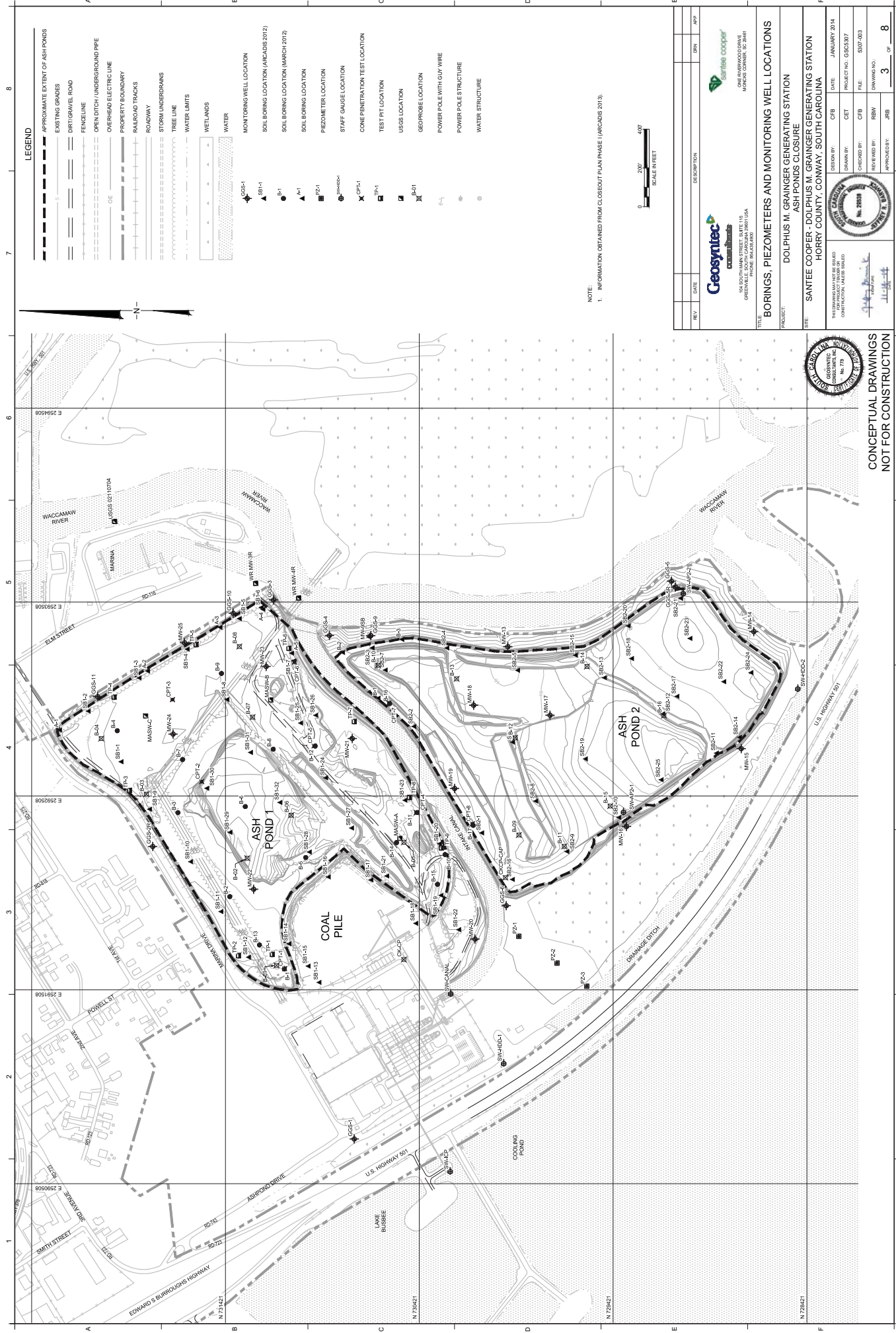
DATE: 1/14/14

PROJECT: DOLPHUS M. GRAINGER GENERATING STATION
ASH PONDS CLOSURE

SITE: SANTEE COOPER - DOLPHUS M. GRAINGER GENERATING STATION
HORRY COUNTY, CONWAY, SOUTH CAROLINA

DESIGN BY: CFB
DRAWN BY: CFB
CHECKED BY: CFB
REVIEWED BY: REV
APPROVED BY: JRB

PROJECT NO.: GS03307
FILE: 5307-002
DRAWING NO.:



LEGEND

- APPROXIMATE EXTENT OF ASH PONDS
- EXISTING GRADES
- DIRT/GRAVEL ROAD
- FENCELINE
- OPEN DITCH / UNDERGROUND PIPE
- OVERHEAD ELECTRIC LINE
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 WATER STRUCTURE

1. INFORMATION OBTAINED FROM CLOSEOUT PLAN PHASE (ARCADIS 2013).

REV	DATE	DESCRIPTION	DN	APP

Geosyntec
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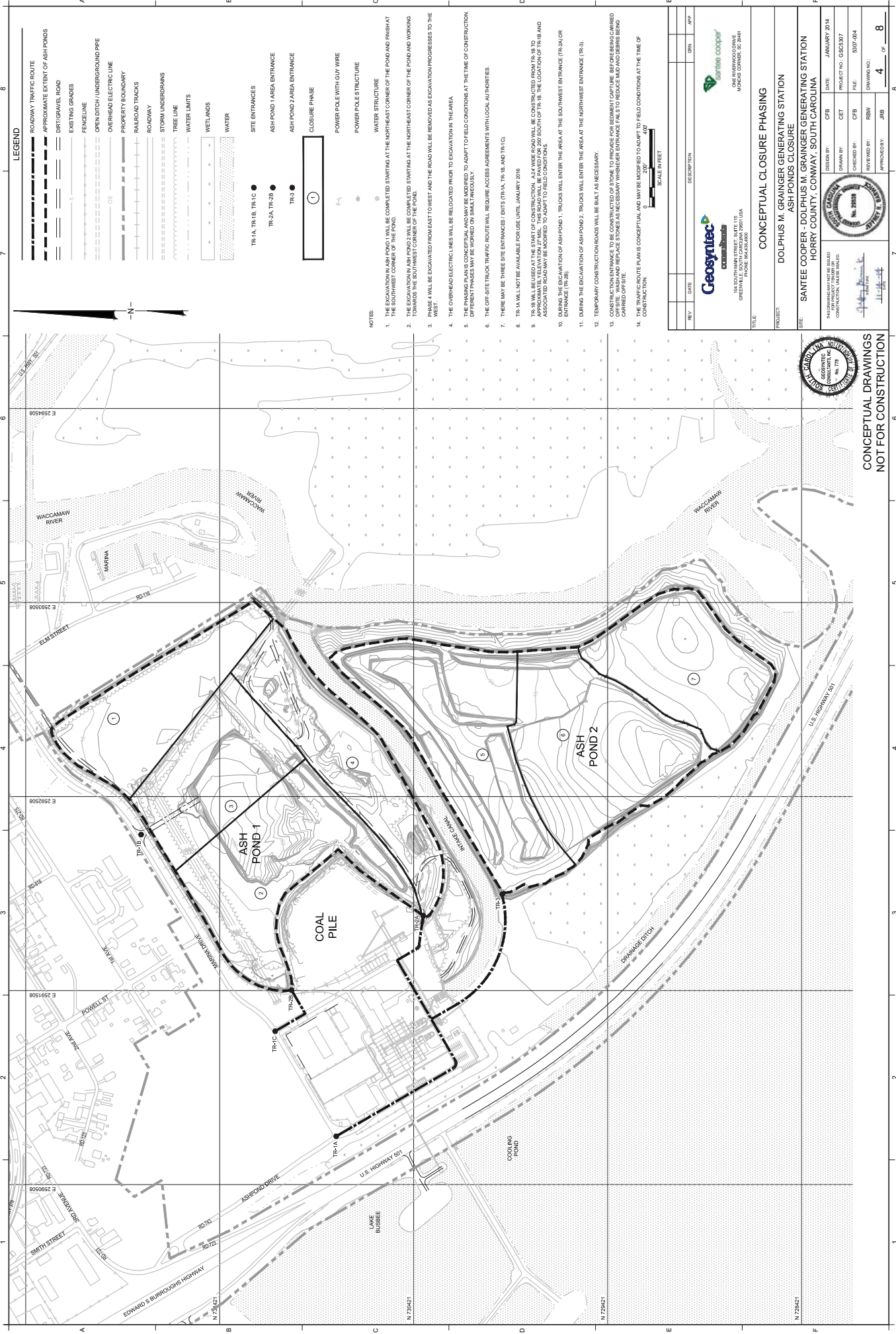
PROJECT: DOLPHUS M. GRAINGER GENERATING STATION
ASH PONDS CLOSURE

SITE: SANTEE COOPER - DOLPHUS M. GRAINGER GENERATING STATION
 Horry County, Conway, South Carolina

DATE: JANUARY 2014
 PROJECT NO: GSC5337
 CHECKED BY: CFB
 FILE: S307-003
 REVIEWED BY: REV
 DRAWING NO: 3 of 8
 APPROVED BY: JRB

REGISTERED PROFESSIONAL ENGINEER
 STATE OF SOUTH CAROLINA
 No. 773

**CONCEPTUAL DRAWINGS
 NOT FOR CONSTRUCTION**



LEGEND

- ROADWAY TRAFFIC ROUTE
- APPROXIMATE EXTENT OF ASH PONDS
- DRIFT GRAVEL LODG
- EXISTING GRADES
- FENCE LINE
- OPEN DITCH / UNDERGROUND PIPE
- OVERHEAD ELECTRIC LINE
- PROPERTY BOUNDARY
- RAILROAD TRACKS
- ROADWAY
- STORM UNDERDRAINS
- TREE LINE
- WATER LIMITS
- WETLANDS
- WATER

NOTE:

1. THE EXCAVATION WORK SHALL BE COMPLETED STARTING AT THE NORTHEAST CORNER OF THE POND AND FINISH AT THE SOUTHWEST CORNER OF THE POND.
2. THE EXCAVATION WORK SHALL BE COMPLETED STARTING AT THE NORTHEAST CORNER OF THE POND AND WORKING TOWARD THE SOUTHWEST CORNER OF THE POND.
3. ALL EXCAVATION SHALL BE COMPLETED PRIOR TO THE START OF CONSTRUCTION OF THE POND.
4. THE OVERHEAD ELECTRICAL LINES WILL BE RELOCATED PRIOR TO EXCAVATION IN THE AREA.
5. THE PHASING PLANS CONCEPTUAL AND MAY BE MODIFIED TO ADAPT TO FIELD CONDITIONS AT THE TIME OF CONSTRUCTION. DIFFERENT PHASING MAY BE WORKED ON SIMULTANEOUSLY.
6. THE OFF-SITE TRUCK TRAFFIC ROUTE WILL REQUIRE ACCESS AGREEMENTS WITH LOCAL AUTHORITIES.
7. THERE MAY BE THREE SITE ENTRANCES / EXITS (TR-1A, TR-1B, AND TR-1C).
8. TR-1A WILL NOT BE AVAILABLE FOR USE UNTIL JANUARY 2018.
9. TR-1B WILL BE AVAILABLE AT THE START OF CONSTRUCTION. A 24 HOUR ROAD WILL BE CONSTRUCTED FROM TR-1B TO APPROXIMATE ELEVATION 277.5'. THIS ROAD WILL BE PAVED FOR 200' SOUTH OF TR-1B. THE LOCATION OF TR-1B AND ASSOCIATED ROADWAY WILL BE MODIFIED TO ADAPT TO FIELD CONDITIONS.
10. DURING THE EXCAVATION OF ASHPOND 1, TRUCKS WILL ENTER THE AREA AT THE SOUTHWEST ENTRANCE (TR-2A OR ENTRANCE (TR-2B)).
11. DURING THE EXCAVATION OF ASHPOND 2, TRUCKS WILL ENTER THE AREA AT THE NORTHWEST ENTRANCE (TR-3).
12. TEMPORARY CONSTRUCTION ROADS WILL BE BUILT AS NECESSARY.
13. CONSTRUCTION ENTRANCE TO BE CONSTRUCTED OF STONE TO PROVIDE FOR SEDIMENT CAPTURE. BEFORE BEING CARRIED OFF SITE. AND REPLACE STONES AS NECESSARY THROUGH ENTRANCE FACILITY TO REDUCE EROSION AND SEDIMENT BEING CARRIED OFF SITE.
14. THE PHASING PLANS CONCEPTUAL AND MAY BE MODIFIED TO ADAPT TO FIELD CONDITIONS AT THE TIME OF CONSTRUCTION.

SCALE SHEET

0 200' 400'

CONCEPTUAL CLOSURE PHASING

DOLPHUS M. GRAINGER GENERATING STATION
ASH PONDS CLOSURE

SANTEE COOPER - DOLPHUS M. GRAINGER GENERATING STATION
HORRY COUNTY, CONWAY, SOUTH CAROLINA

REV	DATE	DESCRIPTION	DIN	APP

DESIGN BY	DATE	PROJECT NO.	DATE
CEI	JANUARY 2014	0825337	
CHECKED BY:	DATE	PROJECT NO.	DATE
CEI		0825337	
REVIEWED BY:	DATE	PROJECT NO.	DATE
		0825337	
APPROVED BY:	DATE	PROJECT NO.	DATE
		0825337	

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**CONCEPTUAL DRAWINGS
NOT FOR CONSTRUCTION**

CONCEPTUAL CLOSURE PHASING

DOLPHUS M. GRAINGER GENERATING STATION
ASH PONDS CLOSURE

SANTEE COOPER - DOLPHUS M. GRAINGER GENERATING STATION
HORRY COUNTY, CONWAY, SOUTH CAROLINA

DESIGN BY	DATE	PROJECT NO.	DATE
CEI	JANUARY 2014	0825337	
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REVIEWED BY:	DATE	PROJECT NO.	DATE
		0825337	
APPROVED BY:	DATE	PROJECT NO.	DATE
		0825337	

**CONCEPTUAL DRAWINGS
NOT FOR CONSTRUCTION**

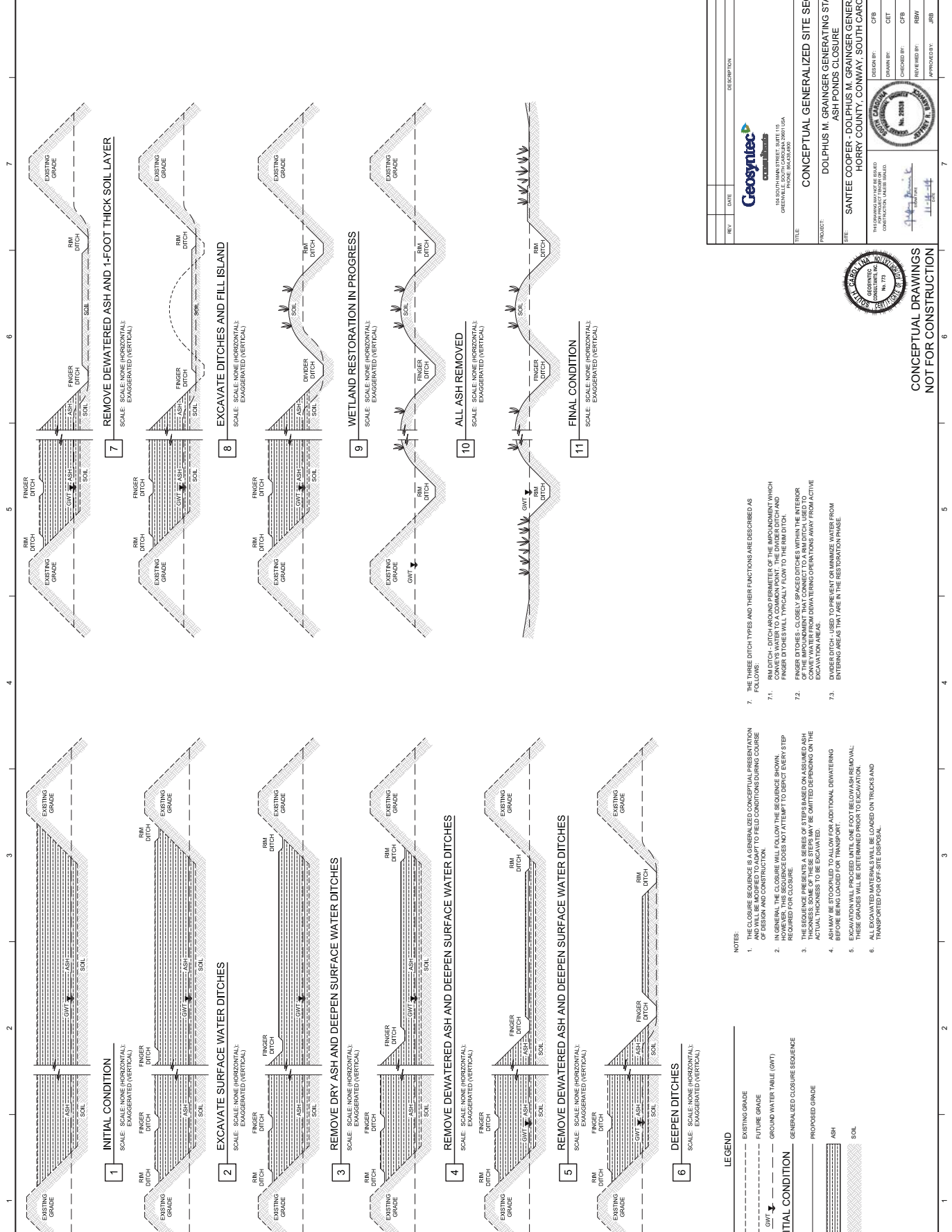
CONCEPTUAL CLOSURE PHASING

DOLPHUS M. GRAINGER GENERATING STATION
ASH PONDS CLOSURE

SANTEE COOPER - DOLPHUS M. GRAINGER GENERATING STATION
HORRY COUNTY, CONWAY, SOUTH CAROLINA

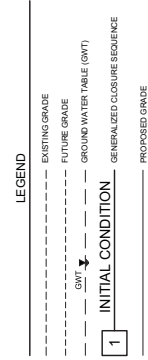
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		0825337	
APPROVED BY:	DATE	PROJECT NO.	DATE
		0825337	

**CONCEPTUAL DRAWINGS
NOT FOR CONSTRUCTION**



- NOTES:**
1. THE CLOSURE SEQUENCE IS GENERALIZED CONCEPTUAL PRESENTATION AND WILL BE ADAPTED TO FIELD CONDITIONS DURING COURSE OF CONSTRUCTION.
 2. IN GENERAL, THE CLOSURE WILL FOLLOW THE SEQUENCE SHOWN, HOWEVER, THIS SEQUENCE DOES NOT ATTEMPT TO DEPICT EVERY STEP REQUIRED FOR CLOSURE.
 3. THE SEQUENCE PRESENTS A SERIES OF STEPS BASED ON ASSUMED ASH REMOVAL OPERATIONS. THE SEQUENCE IS GENERALIZED AND THE ACTUAL THICKNESS TO BE EXCAVATED WILL BE DETERMINED BY FIELD OPERATIONS.
 4. ASH MAY BE STOCKPILED TO ALLOW FOR ADDITIONAL DEWATERING BEFORE BEING LOADED FOR TRANSPORT.
 5. EXCAVATION WILL PROCEED UNTIL ONE FOOT BELOW WASH REMOVAL GRADE. THESE GRADES WILL BE DETERMINED PRIOR TO EXCAVATION.
 6. ALL EXCAVATED MATERIALS WILL BE LOADED ON TRUCKS AND TRANSPORTED FOR OFF-SITE DISPOSAL.

7. THE THREE DITCH TYPES AND THEIR FUNCTIONS ARE DESCRIBED AS FOLLOWS:
 - 71. RM DITCH - DITCH AROUND PERIMETER OF THE IMPOUNDMENT WHICH WILL BE ADAPTED TO FLOW TO FIELD CONDITIONS DURING COURSE OF CONSTRUCTION. RM DITCHES WILL TYPICALLY FLOW TO THE FINGER DITCH.
 - 72. FINGER DITCHES - CLOSELY SPACED DITCHES WITHIN THE INTERIOR OF THE IMPOUNDMENT THAT CONNECT TO A RM DITCH USED TO REMOVE EXCAVATED MATERIALS AWAY FROM ACTIVE EXCAVATION AREAS.
 - 73. DIVIDER DITCH - USED TO PREVENT OR MANAGE WATER FROM ENTERING AREAS THAT ARE IN THE RESTORATION PHASE.



REV	DATE	DESCRIPTION	DN	APP

ONE WOODCOCK DRIVE
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PHONE 803.243.8800

ONE WOODCOCK DRIVE
GREENVILLE, SOUTH CAROLINA 29615 USA
PHONE 803.243.8800

DESIGN BY:	CFB	DATE:	JANUARY 2014
DRAWN BY:	CET	PROJECT NO.:	03C5337
CHECKED BY:	CFB	PIE:	5307-005
REVIEWED BY:	REV	DRAWING NO.:	
APPROVED BY:	JRB		

CONCEPTUAL GENERALIZED SITE SECTIONS

PROJECT: DOLPHUS M. GRANGER GENERATING STATION
ASH PONDS CLOSURE

SITE: SANTEE COOPER - DOLPHUS M. GRANGER GENERATING STATION
HORRY COUNTY, CONWAY, SOUTH CAROLINA

DATE: JANUARY 2014

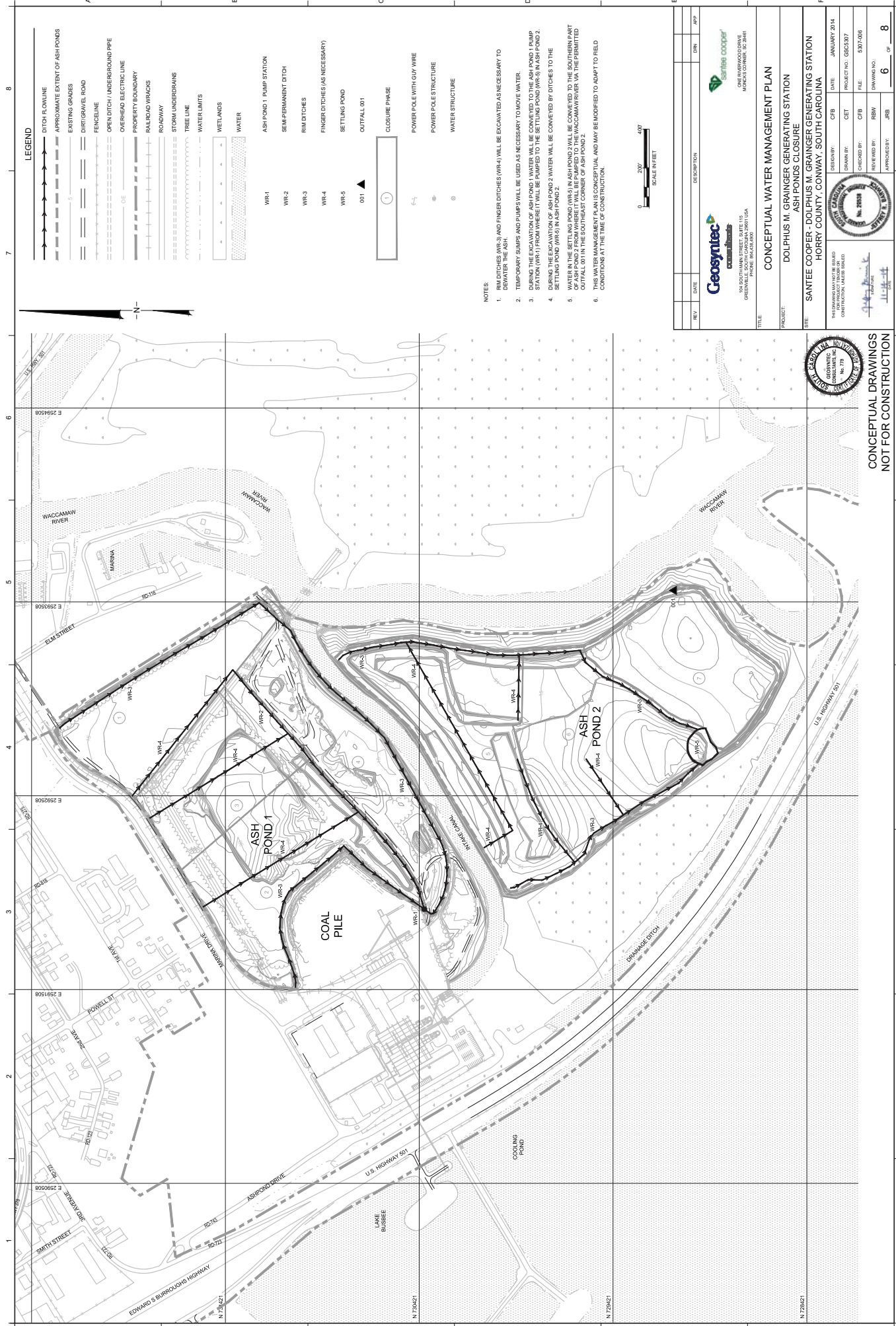
PROJECT NO.: 03C5337

PIE: 5307-005

DRAWING NO.:

REV: 5 of 8

**CONCEPTUAL DRAWINGS
NOT FOR CONSTRUCTION**



LEGEND

- DITCH FLOWLINE
- - - - - APPROXIMATE EXTENT OF ASH PONDS
- EXISTING GRADES
- DRIFT/GRAVEL ROAD
- FENCE LINE
- OPEN DITCH / UNDERGROUND PIPE
- OVERHEAD ELECTRIC LINE
- PROPERTY BOUNDARY
- RAILROAD TRACKS
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- WETLANDS
- WATER

- WR-1 ASHPOND 1 PUMP STATION
- WR-2 SEMI-PERMANENT DITCH
- WR-3 RIM DITCHES
- WR-4 FINGER DITCHES (AS NECESSARY)
- WR-5 SETTLING POND
- 001 OUTFALL 001
- CLOSURE PHASE
- ⚡ POWER POLE WITH GUY WIRE
- ⚡ POWER POLE STRUCTURE
- ⊙ WATER STRUCTURE

NOTES

1. ALL DITCHES (WR-3) AND FINGER DITCHES (WR-4) WILL BE EXCAVATED AS NECESSARY TO PROTECT THE UNDERGROUND UTILITY NETWORK.
2. TEMPORARY PUMPS AND PUMPS WILL BE USED AS NECESSARY TO MOVE WATER.
3. DURING THE EXCAVATION OF ASHPOND 1 WATER WILL BE CONVERTED TO THE ASHPOND 1 PUMP STATION AND PUMPED TO THE SETTLING POND (WR-5) IN ASHPOND 2.
4. DURING THE EXCAVATION OF ASHPOND 2 WATER WILL BE CONVERTED BY DITCHES TO THE SETTLING POND (WR-5) IN ASHPOND 2.
5. WATER IN THE SETTLING POND (WR-5) IN ASHPOND 2 WILL BE CONVEYED TO THE SOUTHERN PART OF ASHPOND 2 FROM WHERE IT WILL BE PUMPED TO THE WACCAMAW RIVER VIA THE PERMITTED OUTFALL 001 IN THE SOUTHEAST CORNER OF ASHPOND 2.
6. THIS WATER MANAGEMENT PLAN IS CONCEPTUAL AND MAY BE MODIFIED TO ADAPT TO FIELD CONDITIONS AT THE TIME OF CONSTRUCTION.



REV	DATE	DESCRIPTION	DWN	APP

Geosyntec
 CONSULTANTS
 ONE RIVERWOOD DRIVE
 GREENWELL SOUTH CAROLINA 29615 USA
 PHONE 803.633.8500

Santee Cooper
 ONE RIVERWOOD DRIVE
 GREENWELL SOUTH CAROLINA 29615 USA
 PHONE 803.633.8500

TITLE
 CONCEPTUAL WATER MANAGEMENT PLAN

PROJECT
 DOLPHUS M. GRANGER GENERATING STATION
 ASH PONDS CLOSURE

SITE
 SANTEE COOPER - DOLPHUS M. GRANGER GENERATING STATION
 HORRY COUNTY, CONWAY, SOUTH CAROLINA

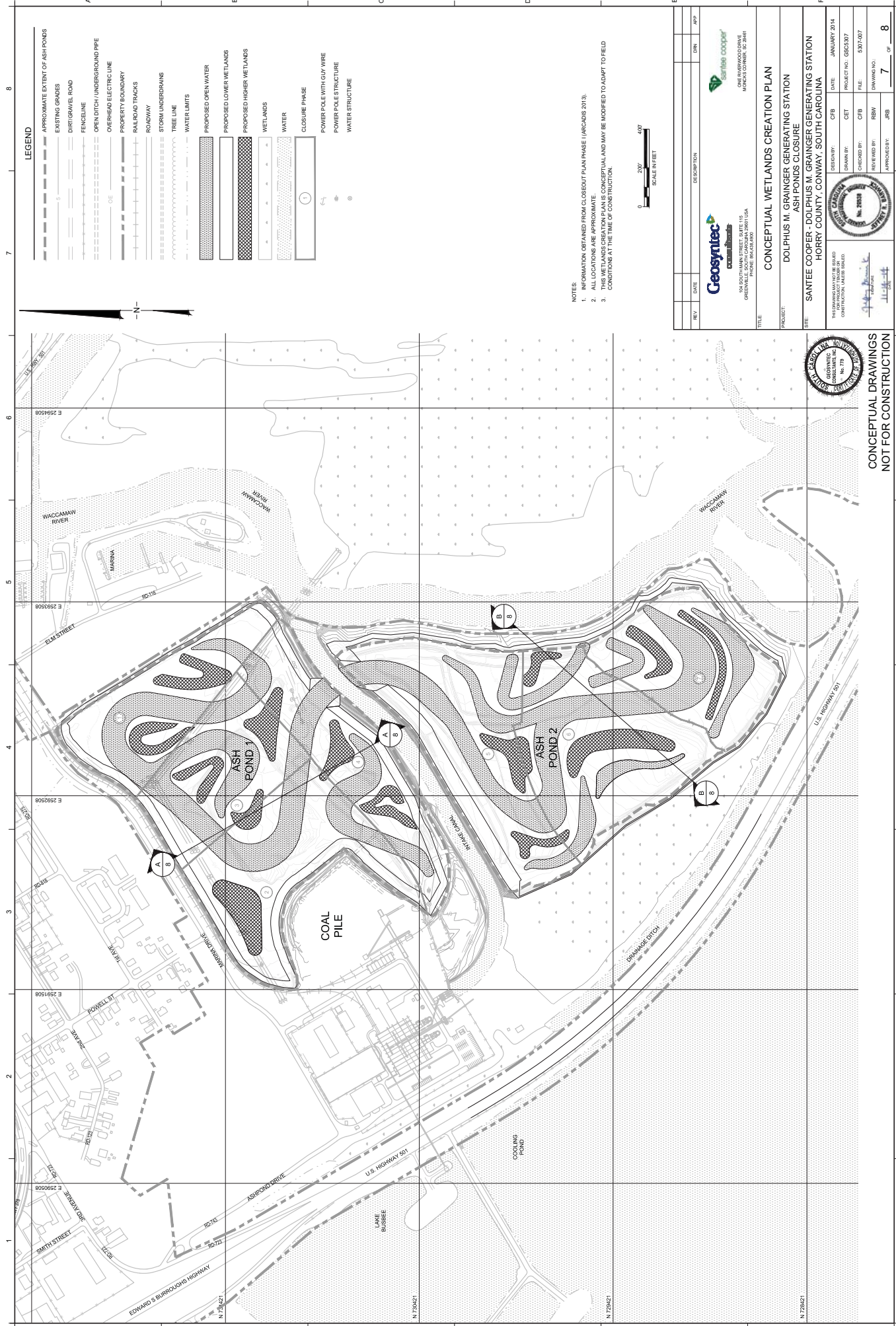
DESIGNED BY	CFB	DATE	JANUARY 2014
CHECKED BY	CET	PROJECT NO.	05C5337
REVIEWED BY	CFB	FILE	537.006
APPROVED BY	JRB	DRAWING NO.	6 OF 8

THE DRAWING AND ALL INFORMATION CONTAINED HEREIN ARE UNCLASSIFIED
 DATE 01/28/2014 BY 60324

APPROVED FOR CONSTRUCTION
 SANTEE COOPER
 PROJECT NO. 05C5337
 DRAWING NO. 6 OF 8

**CONCEPTUAL DRAWINGS
 NOT FOR CONSTRUCTION**

APPROVED FOR CONSTRUCTION
 SANTEE COOPER
 PROJECT NO. 05C5337
 DRAWING NO. 6 OF 8



LEGEND

- APPROXIMATE EXTENT OF ASH PONDS
- EXISTING GRADES
- DIRT/GRAVEL ROAD
- FENCELINE
- OPEN DITCH / UNDERGROUND PIPE
- OVERHEAD ELECTRIC LINE
- PROPERTY BOUNDARY
- RAILROAD TRACKS
- ROADWAY
- STORM UNDERDRAINS
- TREE LINE
- WATER LIMITS
- PROPOSED OPEN WATER
- PROPOSED LOWER WETLANDS
- PROPOSED HIGHER WETLANDS
- WETLANDS
- WATER
- CLOSURE PHASE
- POWER POLE WITH GUY WIRE
- WATER STRUCTURE

- NOTES**
1. INFORMATION OBTAINED FROM CLOSEOUT PLAN PHASE (I/AROADS 2013).
 2. ALL LOCATIONS ARE APPROXIMATE.
 3. CONDITIONS AT THE TIME OF CONSTRUCTION.



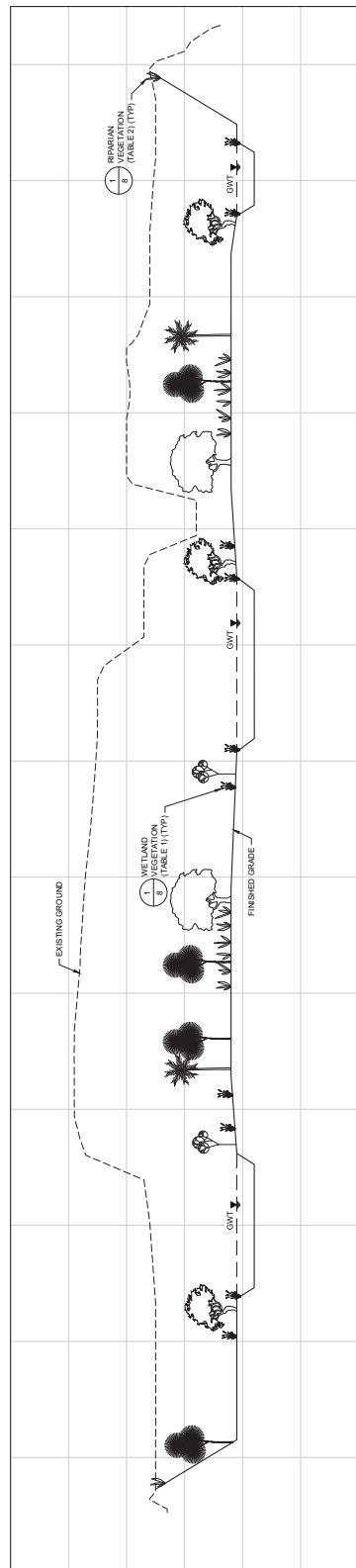
REV	DATE	DESCRIPTION	DRN	APP

10000000000 GREENVILLE, SOUTH CAROLINA 29615 USA PHONE 803.323.8300		ONE RIVERWOOD DRIVE WORKS BOSTON, SC 29818	

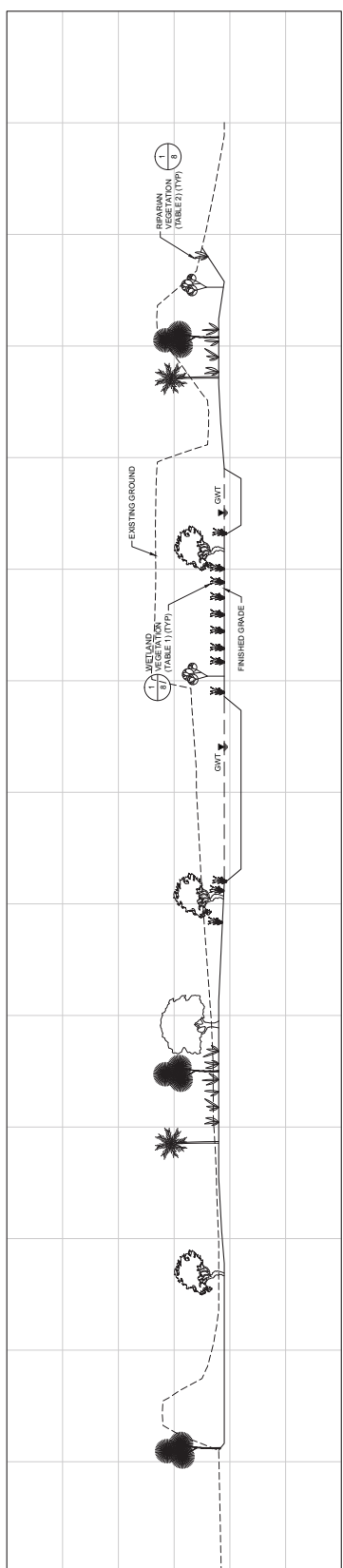
CONCEPTUAL WETLANDS CREATION PLAN			
PROJECT: DOLPHUS M. GRANGER GENERATING STATION			
ASH PONDS CLOSURE			
SITE: SANTEE COOPER - DOLPHUS M. GRANGER GENERATING STATION			
HORRY COUNTY, CONWAY, SOUTH CAROLINA			
DESIGNER:	CFB	DATE:	JANUARY 2014
DRAWN BY:	CET	PROJECT NO.:	0503387
CHECKED BY:	CFB	FILE:	537-007
REVISED BY:	REV	DRAWING NO.:	
APPROVED BY:	JRB		7 of 8



CONCEPTUAL DRAWINGS
NOT FOR CONSTRUCTION



1
7
PROFILE
SECTION A-A
SCALE: NTS (HORIZONTAL); EXAGGERATED (VERTICAL)
AS SHOWN



2
7
PROFILE
SECTION B-B
SCALE: NTS (HORIZONTAL); EXAGGERATED (VERTICAL)
AS SHOWN

LEGEND

- FINISHED GRADE
- GROUND WATER TABLE (GWT)
- EXISTING GROUND
- WETLAND VEGETATION
- RIPARIAN VEGETATION
- BALD CYPRESS
- SWEETGUM
- BLACKGUM
- LOBLOLLY PINE
- RED MAPLE
- SWEETGUM

TABLE 1. ITEMIZED WETLAND SEEDING LIST

SYMBOL	COMMON NAME	SCIENTIFIC NAME	PLANTING RATE
(Symbol)	WETLAND VEGETATION	WETLAND VEGETATION	1 PER 100 SQ FT
(Symbol)	RIPARIAN VEGETATION	RIPARIAN VEGETATION	1 PER 100 SQ FT
(Symbol)	BALD CYPRESS	BALD CYPRESS	1 PER 100 SQ FT
(Symbol)	SWEETGUM	SWEETGUM	1 PER 100 SQ FT
(Symbol)	BLACKGUM	BLACKGUM	1 PER 100 SQ FT
(Symbol)	LOBLOLLY PINE	LOBLOLLY PINE	1 PER 100 SQ FT
(Symbol)	RED MAPLE	RED MAPLE	1 PER 100 SQ FT
(Symbol)	SWEETGUM	SWEETGUM	1 PER 100 SQ FT
TOTAL			

TABLE 2. ITEMIZED RIPARIAN SEEDING LIST

SYMBOL	COMMON NAME	SCIENTIFIC NAME	PLANTING RATE
(Symbol)	WETLAND VEGETATION	WETLAND VEGETATION	1 PER 100 SQ FT
(Symbol)	RIPARIAN VEGETATION	RIPARIAN VEGETATION	1 PER 100 SQ FT
(Symbol)	BALD CYPRESS	BALD CYPRESS	1 PER 100 SQ FT
(Symbol)	SWEETGUM	SWEETGUM	1 PER 100 SQ FT
(Symbol)	BLACKGUM	BLACKGUM	1 PER 100 SQ FT
(Symbol)	LOBLOLLY PINE	LOBLOLLY PINE	1 PER 100 SQ FT
(Symbol)	RED MAPLE	RED MAPLE	1 PER 100 SQ FT
(Symbol)	SWEETGUM	SWEETGUM	1 PER 100 SQ FT
TOTAL			

TABLE 3. ITEMIZED FORESTED WETLAND TREE PLANTING LIST

WETLAND	SEEDS NAME	COMMON NAME
WETLAND	WETLAND VEGETATION	WETLAND VEGETATION
RIPARIAN	RIPARIAN VEGETATION	RIPARIAN VEGETATION
BALD CYPRESS	BALD CYPRESS	BALD CYPRESS
SWEETGUM	SWEETGUM	SWEETGUM
BLACKGUM	BLACKGUM	BLACKGUM
LOBLOLLY PINE	LOBLOLLY PINE	LOBLOLLY PINE
RED MAPLE	RED MAPLE	RED MAPLE
SWEETGUM	SWEETGUM	SWEETGUM

NOTE:
1. THE SEEDING LIST MAY BE REPLACED FOR A SIMILAR LIST TO ADJUST FOR FIELD CONDITIONS.
2. THIS WETLANDS CREATION PLAN IS CONCEPTUAL AND MAY BE MODIFIED TO ADAPT TO FIELD CONDITIONS AT THE TIME OF CONSTRUCTION.

ONE RIVERWOOD DRIVE
GREENVILLE, SOUTH CAROLINA 29615, USA
PHONE: 803.433.8000

CONCEPTUAL WETLANDS CREATION CROSS SECTIONS

PROJECT: DOLPHUS M. GRAINGER GENERATING STATION
ASH PONDS CLOSURE

SITE: SANTEE COOPER - DOLPHUS M. GRAINGER GENERATING STATION
HORRY COUNTY, CONWAY, SOUTH CAROLINA

DESIGN BY: CFB DATE: JANUARY 2014
DRAWN BY: CFB PROJECT NO.: GSC5337
CHECKED BY: CFB PLOT NO.: 5307-008
REVIEWED BY: REVW
DATE: 11-14-14
APPROVED BY: JRB DRAWING NO.: 8 OF 8

CONCEPTUAL DRAWINGS
NOT FOR CONSTRUCTION

1
8
TABLE
PLANTING TABLES



ATTACHMENT 1

DHEC Form 1795



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 Grainger Generating Station		
2. Facility Contact	First Name: Susan	MI: W	Last Name: Jackson
	Title: Supervisor Env. Services	Phone: 843-761-8000 x5664	E-mail: swjackso@santecooper.com
3. Facility Contact Mailing Address	Street or P.O. Box: PO Box 2946101, M/C:A203		
	City: Moncks Corner	State: SC	Zip Code: 29461
4. Facility Location Address	Street, Route, or Other Specific Identifier: 1605 Marina Drive		
	City: Conway	State: SC	Zip Code: 29526
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:		
	City:	State:	Zip Code:
7. Wastewater Facility Existence Date	Facility Existence Date (mm/dd/yyyy): 1966		
8. SIC or NAICS Codes	Primary: 4911	2nd:	3rd: 4th:
9. Facility Type	Pretreatment: <input type="checkbox"/> yes <input checked="" type="checkbox"/> no	NPDES: <input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Land Application: <input type="checkbox"/> yes <input checked="" type="checkbox"/> no If yes, check type: <input type="checkbox"/> wastewater <input type="checkbox"/> sludge
10. Applicable NPDES and/or ND Permits (List All)	NPDES or ND:	NPDES or ND: SCR000000, SC0001104, SCR004149	NPDES or ND:
11. Wastewater Construction Permits (List All)	Permit #:	Permit #: 77-5A-282, 713, 4762, 4556	Permit #:
	Permit #:	Permit #: 12691	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	9 8 0 5 1 5 1 5 9
15. RCRA/HSWA Corrective Action	Is this facility subject to RCRA/HSWA corrective action requirement via a permit or an order? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no		
16. Groundwater Questions	Any known releases to soil or groundwater from the wastewater treatment unit? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no		
	Depth to groundwater (in feet): 1.0' to 10.0'		
	Is this facility subject to groundwater monitoring requirements via a permit, order or other agreement? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no		
	If yes, list permit number, order, number, or date of agreement: NPDES Permit SC0001104; Site ID #00367 Site Assessment Work Plan 04/25/2011		

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 3 Landfill - permit to operate expected 2015		Name of Receiving Facility:	
Address (Street, Route, or Other Specific Identifier): 553 Cross Station Road		Address (Street, Route, or Other Specific Identifier):	
City: Pineville	State: SC	Zip: 29468	City: State: Zip:
Phone: 843-761-8000	Waste types to be received: <input type="checkbox"/> Wastewater <input type="checkbox"/> Sludge <input checked="" type="checkbox"/> Soils <input checked="" type="checkbox"/> Other (specify coal combustion byproducts qty. to be determined during closure)	Phone:	Waste types to be received: <input type="checkbox"/> Wastewater <input type="checkbox"/> Sludge <input type="checkbox"/> Soils <input type="checkbox"/> Other (specify _____)
Contact: Mr. Jay Hudson, PE		Contact:	
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:	Waste types to be received: <input type="checkbox"/> Wastewater <input type="checkbox"/> Sludge <input type="checkbox"/> Soils <input type="checkbox"/> Other (specify _____)	Phone:	Waste types to be received: <input type="checkbox"/> Wastewater <input type="checkbox"/> Sludge <input type="checkbox"/> Soils <input type="checkbox"/> Other (specify _____)
Contact:		Contact:	
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:			
<ul style="list-style-type: none"> 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. 		<u>See attached Figures 1-1 & 1-2 and Drawings.</u>	
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. <u>See attached Drawings.</u>			
This drawing should be approximately to scale and should clearly show the following:			
<ul style="list-style-type: none"> 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.			
<u>An aerial photograph of the Site is provided as Figure 1-2.</u>			

APPENDIX A

Pollutant	CAS No.	Believed Present	Pollutant	CAS No.	Believed Present
Acenaphthene	83-82-9		Chrysene	218-01-9	
Acenaphthylene	208-96-8		Colbalt, Total	7440-48-4	
Acetaldehyde	75-07-0		Color	n/a	
Acrolein	107-02-8		Copper, Total	7440-50-8	x
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	x	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	x	Diazinon	333-41-5	
Arsenic, Total	7440-38-2	x	Dibenz[a,h]anthracene	53-70-3	
Asbestos	1332-21-4		Dicamba	1918-00-9	
Barium, Total	7440-39-3	x	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	x	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	x	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	x	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	X	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	X
Isophorone	78-59-1		Silver, Total	7440-22-4	X
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	X
Lead, Total	7439-92-1	X	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	X	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	X	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	X
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	X
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

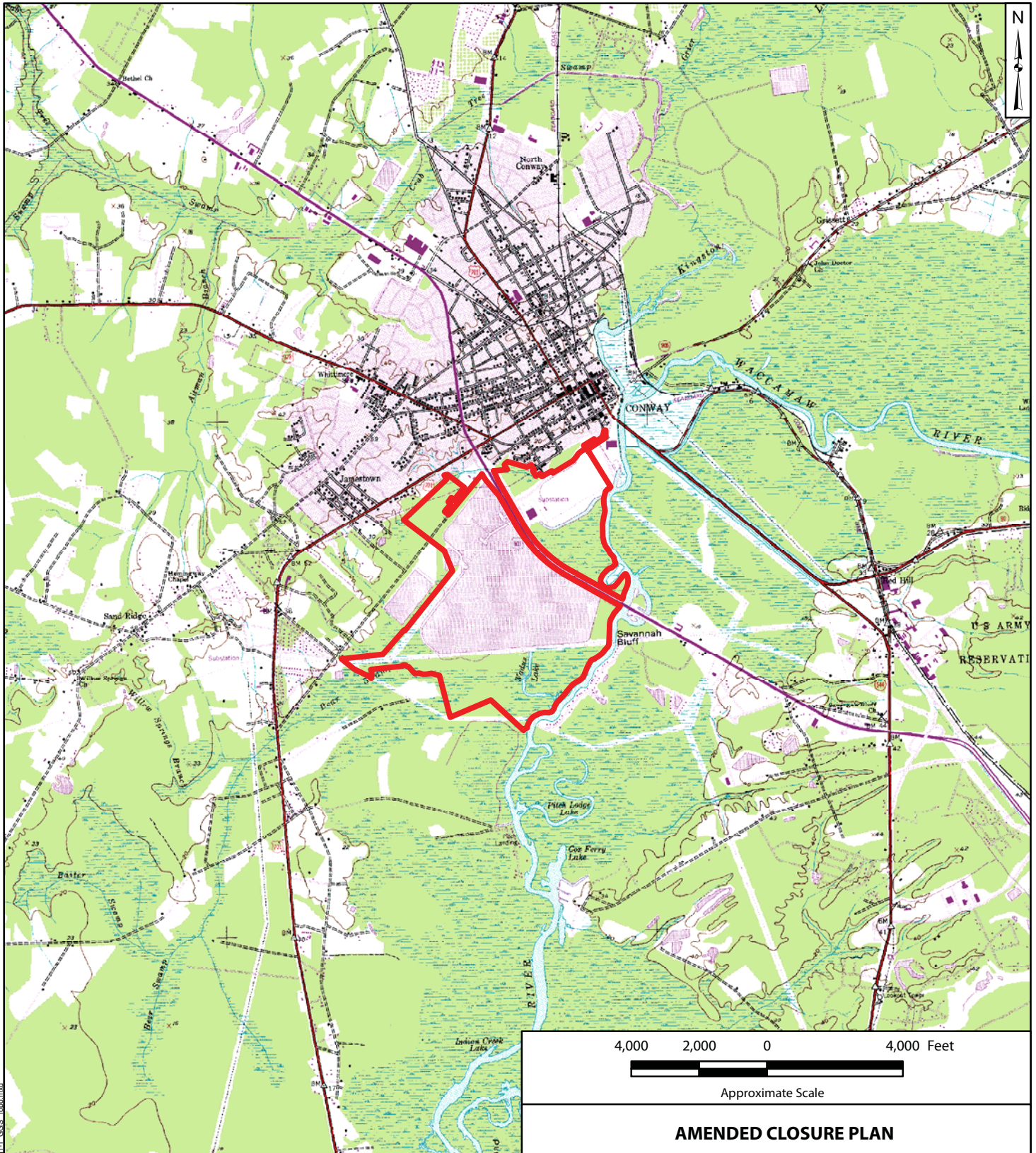
On Appendix A of this document, identify all pollutants that may be present in the wastewater treatment system by placing a check mark '✓' in the 'Believed Present' column. Additionally, please list in the additional spaces provided any pollutants that may be present that are not listed on Appendix A.

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.



4,000 2,000 0 4,000 Feet



Approximate Scale

AMENDED CLOSURE PLAN

Topographic Site Location Map

Grainger Generating Station
 1605 Marina Drive
 Conway, South Carolina

Geosyntec
 consultants

Figure

1-1

Legend

Approximate Property Line

Notes:

1. Source of USGS topographic map: Libremap Project, accessed 12 November 2013.
2. Property line digitized from available survey and county data.

Greenville, South Carolina

January 2014

P:\PBL\GIS\Source\Cooper_Grainger\Closure_Photo\GIS\Map\CD\Fig1-1_GGS_Topog.mxd



- Domestic Water Wells
- Approximate Property Line
- 1/4 Mile Buffer

Map Notes:

- Source of aerial map: SC Department of Natural Resources, GIS Data Clearinghouse, dated 2006, accessed 14 January 2014.
- Property line digitized from available survey and county data.
- Source of domestic water wells: from file named "Horry County Wells.xls" from SCDNR, accessed 15 November 2013.

2,000 1,000 0 2,000 Feet

Approximate Scale

AMENDED CLOSURE PLAN

Aerial Vicinity Map and Domestic Water Wells

Grainger Generating Station
1605 Marina Drive
Conway, South Carolina

Geosyntec
consultants

Greenville, South Carolina

January 2014

Figure

1-2

ATTACHMENT 2

Groundwater Monitoring Plan

Santee Cooper Grainger Generating Station

Groundwater Monitoring Plan Industrial Wastewater Permit No. SC0001104



Santee Cooper - Grainger Generating Station
Industrial Wastewater Permit # SC0001104
Groundwater Monitoring Plan
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- 1 Summary of Monitoring Well Construction**
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FIGURES

- 1 Facility Location Map**
- 2 Groundwater Monitoring Well Location Map**

APPENDIX

- Water Well Records**
- Sample Field Data Sheet**
- Sample Chain of Custody**

1.0 INTRODUCTION

The purpose of this revised Groundwater Sampling and Analysis Plan is to incorporate modifications in the Industrial Wastewater permit #SC0001104 for the Grainger Generating Station (Grainger). The monitoring system was installed and is operated to monitor groundwater in the vicinity of the ash ponds and if potential impacts are detected, to qualitatively identify the impacting parameters. These monitoring wells are required as a result of permitted activities at the site. A site location map of the facility is included as Figure 1.

In November 1993, The South Carolina Public Service Authority (Santee Cooper) submitted a groundwater monitoring plan for the Grainger Generating Station ash ponds. That plan was approved by the South Carolina Department of Health and Environmental Control (SCDHEC) and was implemented in May 1994, with the installation of six monitoring wells, which were installed around the perimeter of the facility to monitor groundwater quality. In September 2009, SC DHEC approved a Site Assessment Work Plan for Grainger which authorized the addition of four groundwater monitoring wells (total of ten wells), and three piezometers. This groundwater monitoring plan will remain in effect until SCDHEC approves revised versions of the plan or the discontinuation of groundwater monitoring at Grainger. Figure 2 is a location map for all the groundwater monitoring wells and piezometers.

The original plan required the use of submersible pumps which can potentially cause disturbances during purging and sampling because they are not easily controlled as compared to adjustable rate submersible 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, the modified Groundwater Monitoring Plan specified 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 because it was produced by a process that minimizes stress on the aquifer or well as contrasted to the mixed water of a bailer. 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.

A copy of the most current groundwater sampling plan is available to the field personnel performing each sampling event.

1.1 SITE LOCATION

The Santee Cooper Grainger Generating Station is located along Highway 501 By-Pass in Conway, South Carolina, adjacent to the Waccamaw River. Figure 1 provides a general site location map of the Grainger Generating Station.

1.2 SITE OVERVIEW

Grainger Generating Station was retired in 2012. It was a fossil fuel fired electric generating facility with two steam units which used coal as the primary fuel and No. 2 fuel oil for start-up operations. The facility covers 833 acres of developed and undeveloped land. Primary features included:

- Shared coal storage and handling system*
- Two closed 84 MW generating units*
- Two permitted ash disposal ponds*
- One permitted once-through cooling pond.*

Ash resulting from coal combustion was settled out of the wastewater into the ash ponds for either beneficial use or disposal. Pursuant to Industrial Wastewater permit conditions, the ash pond waste water is discharged to the Waccamaw River.

2.0 GEOLOGY AND HYDROLOGY

Grainger lies in the Lower Coastal Plain of the Atlantic Coastal Plain (ACP) physiographic province in South Carolina. The Socastee Formation underlies the site which, according to soil samples collected during the construction of the monitoring wells, consists of silty sands and clayey sandy silts. The area occupied by and adjacent to the Waccamaw River appears to consist of Holocene deposits typical of alluvial deposition. According to James P. Owens (USGS, 1989), the Bear Bluff Formation (upper Pliocene) lies underneath the Holocene and Socastee deposits. In addition, geotechnical data prior to the plant's construction supports Owens' findings by identifying this formation as the stiff to hard calcareous clay.

The following table represents average depth to strata based on soil sample examination June 1994:

<u>Formation</u>	<u>Approximate Depth to Formation</u>
Holocene Deposits	Adjacent to Waccamaw River
Socastee Formation*	0 ft
Bear Bluff Formation**	15 ft

Note: Depth to Formation is relative to plant site elevation.

* Medium tannish fine to medium sand with clayey sandy silts

** Gray calcareous clay with slight sand, silt, and organic matter

3.0 GROUNDWATER MONITORING WELL SYSTEM

The Industrial Wastewater 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 during the post closure period.

3.1 WELL INSTALLATION PROCEDURES

In May 1994, six monitoring wells (GGSMW-1 through 6) were installed in accordance with South Carolina Well Standards and Regulations by Geotech, Inc., a South Carolina certified well drilling consulting firm located in Ballentine, SC. Using hollow stem augers approximately 8.0 inches in diameter, borings were drilled to depths between 19 and 20 feet below grade. Each well consists of a threaded PVC casing 2 inches in diameter, a PVC screen 2 inches in diameter, and an artificial gravel pack. Neat cement was used as the grout.

The exception to this is well GGSMW-5 which was installed using a four inch diameter hand auger because access to this site by the drill rig was not possible. The boring for this well was installed to a depth of approximately 9.0 feet. However, a flowing sand was encountered below the water table (approximately 2.5 ft) and after several attempts, the well could only be completed to 6.0 feet.

Wells GGSMW-2, 3, and 4 have had to be replaced when the original wells were damaged. Then in December 2009, four groundwater monitoring wells (GGWMW-9, 10, 11, and 12) for the site assessment investigation were installed by Geologic Exploration. All of the SCDHEC records for the current groundwater monitoring wells are included in the Appendix. Construction of the wells consisted of the following:

1. Installation of the boring
2. Placement of the PVC screen and pipe
3. Installation of filter pack (silica sand)
4. Placement of bentonite seal
5. Grout to surface with neat cement
6. Grout in place the locking, steel protective well casing with appropriate groundwater monitoring well placard, and steel protective posts.
7. Installation of PVC well cap.

3.2 GROUNDWATER MONITORING WELL SAMPLE LOCATIONS

Originally, six monitoring wells were installed in specific locations surrounding the ash ponds as shown in Figure 2. Since the initial well installation in 1994, several wells have been replaced due to damage from plant operations. GGS-4 was replaced after the original well was inadvertently covered/crushed with dirt. GGS-3 was replaced when the well was destroyed while installing a new access road. GGS-2 was replaced when CSX railroad and Town of Conway were doing maintenance of the ditch adjacent to the railway and well. Per the Site Assessment Work Plan approved by SC DHEC on September 21, 2009, four additional groundwater monitoring wells and three piezometers were installed in strategic locations to augment the original well system. For the purposes of laboratory information management systems the ten wells are identified as GGSMW-1, GGSMW-2, GGSMW-3, GGSMW-4, GGSMW-5, GGSMW-6, GGSMW-9, GGSMW-10, GGSMW-11, and GGSMW-12. These wells are sampled at regular intervals, and water levels are

collected from the wells and the three piezometers (GGSPZ-1, GGWPZ-2, and GGSPZ-3). The surveyed locations and other well construction details are included in Table 1. Well logs are included in the Appendix. The groundwater monitoring wells are secured when they are not being sampled.

Aquifer testing was performed on three of the original wells, GGS-1, GGS-2 and GGS-3 (June 1994). The calculated hydraulic conductivity is presented in Table 2.

4.0 GROUNDWATER SAMPLING PROCEDURE

Groundwater samples are collected two times per year, in April and October. SCDHEC approval will be obtained before making any changes in the number or location of wells to be sampled. Semi-annual reports are submitted to SCDHEC per the Industrial Wastewater permit.

4.1 SAMPLING ORDER AND ANALYTES

Samples are collected from the wells starting with the anticipated least affected to the most affected. As of December, 2013, the order of collection is GGSMW-9, GGSMW-10, GGSMW-3, GGSMW-11, GGSMW-12, GGSMW-5, GGSMW-4, GGSMW-6, GGSMW-2, and GGSMW-1. The order of collection is reviewed prior to each monitoring event based on the results of the previous monitoring period. Table 2 contains the list of parameters and the analytical method used. The parameters are listed in the order of sample collection:

4.2 GROUNDWATER ELEVATION MEASUREMENT PROCEDURES

As part of the groundwater quality monitoring activities, groundwater level measurements are obtained from each of the monitoring wells at the start of every sampling event. The

results are used to evaluate the groundwater flow patterns in the vicinity of the site and to ensure and confirm the location of the monitoring points is suitable. Once each year each well is sounded by lowering the water level probe to the bottom of the well to confirm the elevation of the bottom and to assess whether siltation is occurring in the well. This measurement is made after the water samples are taken.

The groundwater well level is measured to the nearest hundredth of a foot with a water level indicator. 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. The decontamination procedure is described in Section 4.7. The same procedure is used to measure the total depth of the well once each year.

4.3 SAMPLING METHOD

Based on historical data and most current accepted methodology, low-flow sampling was recommended at this site, approved and initiated in the fall of 2009. Low-flow refers to the velocity with which water enters the pump intake and that is imparted to the formation pore water in the immediate vicinity of the well screen. It does not necessarily refer to the flow rate of water discharged at the surface, which can be affected by flow regulators or restrictions. Water level drawdown provides the best indication of the stress imparted by a given flow-rate for a given hydrological situation. The objective is to pump in a manner that minimizes stress (drawdown) to the system to a practical extent while taking into account established site sampling objectives.

During low flow sampling, dedicated sample tubing is 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 is utilized to the pump head connection of the peristaltic pump to minimize the potential for cross contamination. The pump is started at its lowest speed setting and slowly increased until discharge occurs. The pump speed is adjusted until there is no water level drawdown (less than 0.3 ft). Note, the speed and drawdown must 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) are monitored every three 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.

If the low flow sampling apparatus is inoperable for any wells, 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. If bailing is used, at least three well volumes are removed as part of the monitoring of the field parameters until they are stable as described in section 4.5. If this method is used, and the turbidity of the sample is greater than 50 NTU, a disposable, 0.45 micron pore size polycarbonate filter is used to filter the groundwater sample.

4.4 FIELD EQUIPMENT CALIBRATION

Field parameters are analyzed with a Horiba U-52 Multiparameter Water Quality Checker. Calibration of the analyzer must be successfully completed prior to well purging and collection of the field indicator parameters. The analyzer is lab calibrated on a daily basis per the following manufacturer's instruction:

1. Remove the sensor guard and wash the sensor probe 2 or 3 times with

- deionized water.
2. Remove the transparent calibration cup.
 3. Fill the transparent calibration cup to the line with pH 4 standard solution. The transparent calibration cup has With TURB Measurement and Without TURB Measurement gauge lines.
 4. Press the control unit's CAL key to set the calibration mode.
 5. Press the down (□) key to move the cursor to "Auto Calibration", then press the ENTER key.
 6. Immerse the sensor probe in the transparent calibration cup. Check that the pH sensor, ORP sensor, reference electrode, COND sensor, TURB sensor and temperature sensor are submerged in the pH 4 standard solution and check that there are no air bubbles on the sensor.
 7. With the sensor probe still in the transparent calibration cup, place the transparent calibration cup into the black calibration cup.
 8. When all the sensor values have stabilized, press the ENTER key to start calibration. Do not remove the sensor probe from the calibration solution. U-53 turbidity data will display "----" until the calibration is completed. Calibration is finished when the message "Cal complete. MEAS to measure." appears. Press the MEAS key to set the measurement screen, and then start measurement.

4.5 MONITORING WELL PURGING and FIELD PARAMETER MEASUREMENTS

Wells are purged prior to collecting groundwater samples to remove stagnant water from the well casing and obtain samples indicative of the groundwater aquifer. During well purging, the field indicator parameters of pH, specific conductivity (SC), temperature, oxidation reduction potential (ORP/Eh), and turbidity are monitored every three to five minutes (or less if appropriate). Purging will continue until these parameters are stabilized. A stabilized reading indicates the stagnant water has been removed and is determined when three consecutive readings for each parameter have been obtained that meet the specified requirements.

Specifically, the three readings will not vary more than 0.1 units for pH, 3 percent for SC,

and 3 percent for temperature.

ORP/Eh is not used as a purge stabilization parameter but is measured during purging to obtain the measurement of record for ORP for the sampling event. A valid reading is achieved when three consecutive readings do not vary more than 10 millivolts for ORP/Eh.

Turbidity is measured until it has stabilized or is below 10 Nephelometric turbidity Units (NTUs). EPA Region 4 Guidance states, “Although 10 NTU’s is normally considered the minimum goal for most ground water sampling objectives, lower turbidity has been shown to be easily achievable in most situations and reasonable attempts should be made to achieve these lower levels.” If these low levels of turbidity are not achievable, then a stabilized reading is achieved when three consecutive readings do not vary more than 10 percent.

Upon parameter stabilization, the in-line device used to monitor water quality parameters is disconnected or bypassed prior to collecting the groundwater samples.

4.6 GROUNDWATER SAMPLE COLLECTION

Once the readings for the field parameters have stabilized, then a groundwater sample is collected from the well and dispensed directly into the designated laboratory supplied container.

Filled containers are labeled and placed in an ice-filled cooler for transport to Santee Cooper’s Analytical and Biological Services (ABS) lab. During the collection of groundwater samples the pump flow rate is monitored and may remain at the established purge rate or may be adjusted slightly to minimize aeration, bubble formation, turbulent filling of sample

bottles or loss of volatiles due to extended residence time in tubing.

Laboratory analyses are completed at ABS or sent to a contracted, SCDHEC certified facility. All lab analyses are completed within the holding time for the parameter. A chain of custody is completed to track each sample through the collection and analytical process. At no time will samples be left unattended or in an unlocked room.

4.7 DECONTAMINATION PROCEDURES

A clean pair of new, non-powdered, disposable, nitrile gloves are worn each time a different location is sampled, and the gloves shall be donned immediately prior to sampling. The gloves are changed any time during sample collection when their cleanliness is compromised. At a minimum, the gloves are changed between each sample location 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.

All tubing used downhole and in the peristaltic pump is disposable and is changed out in between each well sampling location

5.0 DATA EVALUATION AND REPORTING

The data from the semi-annual detection groundwater sampling events is evaluated and compared to historical data and state water quality standards. The groundwater flow rate and direction is also evaluated by a groundwater professional as part of the groundwater

monitoring requirements.

In accordance with the Industrial Wastewater permit, the groundwater monitoring results shall be submitted semiannually.

6.0 FACILITY CONTACT

The appropriate contact for this facility is:

Santee Cooper
(South Carolina Public Service Authority)
Grainger Generating Station, M/C: A203
P.O. Box 2946101
Moncks Corner, SC 29461-01

Attn: Mr. Jay Hudson, PE
Manager, Environmental Management
(843) 761-5183

Tables

**Grainger Generating Station
 Table 1 Summary of Monitoring Well Construction**

Well ID	North	East	Ground Surface Elevation (msl)	TOC Elevation (msl)	Surface Grout (ft bgs)	Bentonite (ft bgs)	Sand Pack (ft bgs)	Screen Length (ft)	Well Radius (in)	K _h (ft/day)
MW-1	730756	2590738	10.58	13.32	0-3.0	3.0-4.0	4.0-19.5	15	2	6.65
MW-2	731797	2592247	11.37	11.06	0-2.0	2.0-4.0	4.0-15.0	10	2	3.77
MW-3	731381	2593518	3.91	6.72	0-8.0	8.0-9.0	9.0-20.0	10	2	5.34
MW-4	730885	2593336	8.66	12.01	0-2.0	2.0-3.0	4.0-19.0	15	2	
MW-5	729120	2593616	6.52	9.09	0-0.5	0.5-1.0	1.0-6.0	5	2	
MW-6	729972	2591942	5.08	8.19	0-3.0	3.0-4.0	4.0-19.5	15	2	
MW-9	730671	2593335	5.71	8.24	0-2.0	2.0-5.0	5.0-17.0	10	2	
MW-10	731381	2593451	5.92	8.92	0-2.0	2.0-3.0	3.0-15.0	10	2	
MW-11	732081	2593021	6.81	9.63	0-2.0	2.0-3.0	3.0-15.0	10	2	
MW-12	729099	2593586	12.03	14.9	0-1.0	1.0-2.0	2.0-24.0	20	2	

Table 2 - Parameters and Analytical Methods

**Santee Cooper
Grainger Generating Station
Groundwater Monitoring Plan**



Parameter	Analysis Method	Reporting Limit/Units	Container/ Preservation	Holding Time
Depth to Water	Field measurement	0.01 feet	NA	Analyze immediately
pH	Field measurement	S.U.	NA	Analyze immediately
Specific Conductance	Field measurement	µmos	NA	Analyze immediately
Temperature	Field measurement	Degrees C	NA	Analyze immediately
Turbidity	Field measurement	NTU	NA	Analyze immediately
Oxidation Reduction Potential (ORP)/Eh	Field measurement	mV	NA	Analyze immediately
Total Dissolved Solids (TDS)/Total Suspended Solids (TSS)	SM 2540 C, D	mg/L	NA	
Chloride	EPA 350.1	mg/L	60 mL HDPE, Cool to 4°C	28 days
Sulfate	EPA 300.0	mg/L		28 days
Total Metals (As, Ba, Cd, Cr, Cu, Fe, Pb, Se, Th, Zn)	EPA 200.7	µg/L	250 ml HDPE, HNO ₃ pH<2	6 months
Dissolved Arsenic	EPA 200.7	µg/L	250 ml HDPE, HNO ₃ pH<2	6 months

Figures

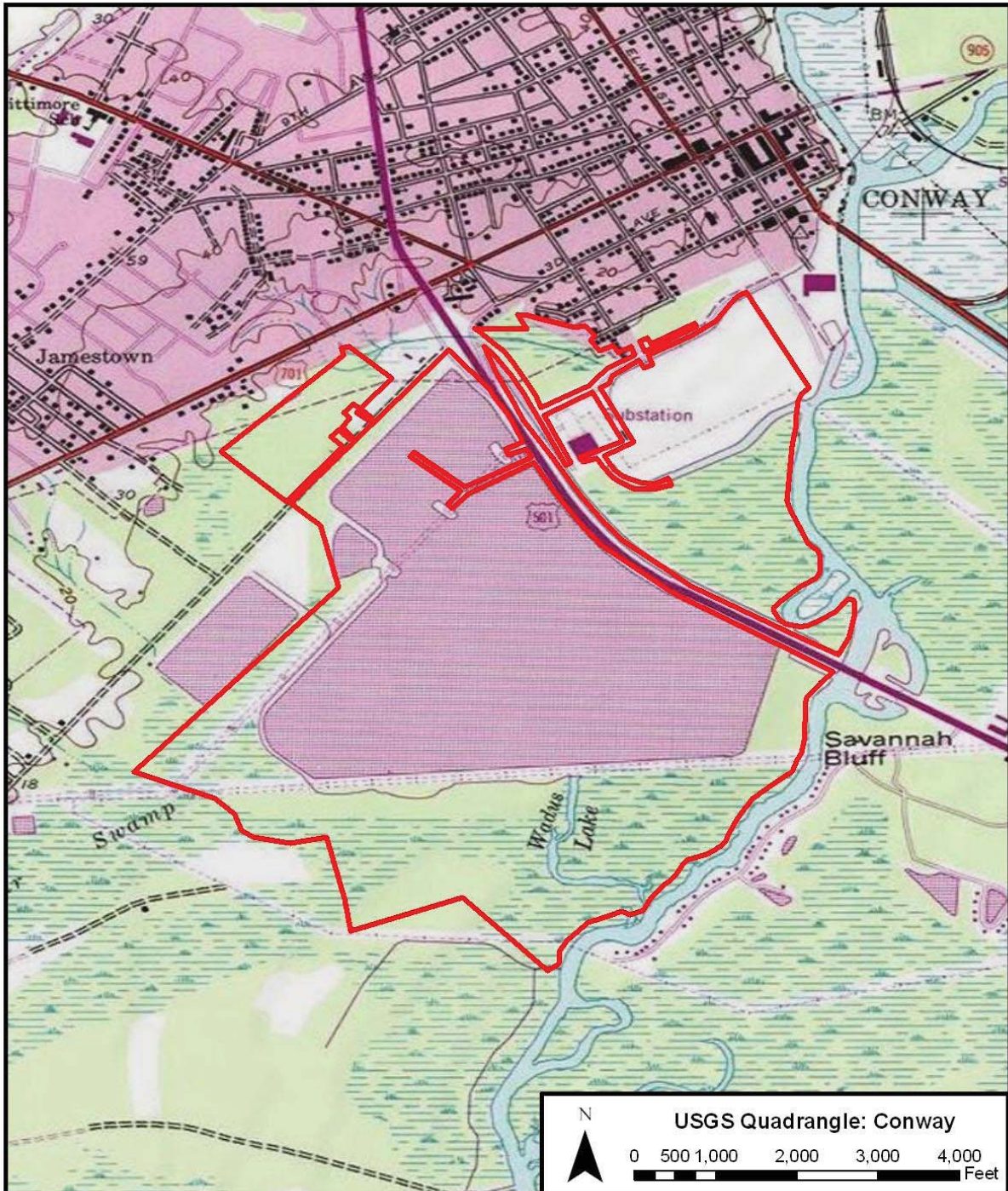
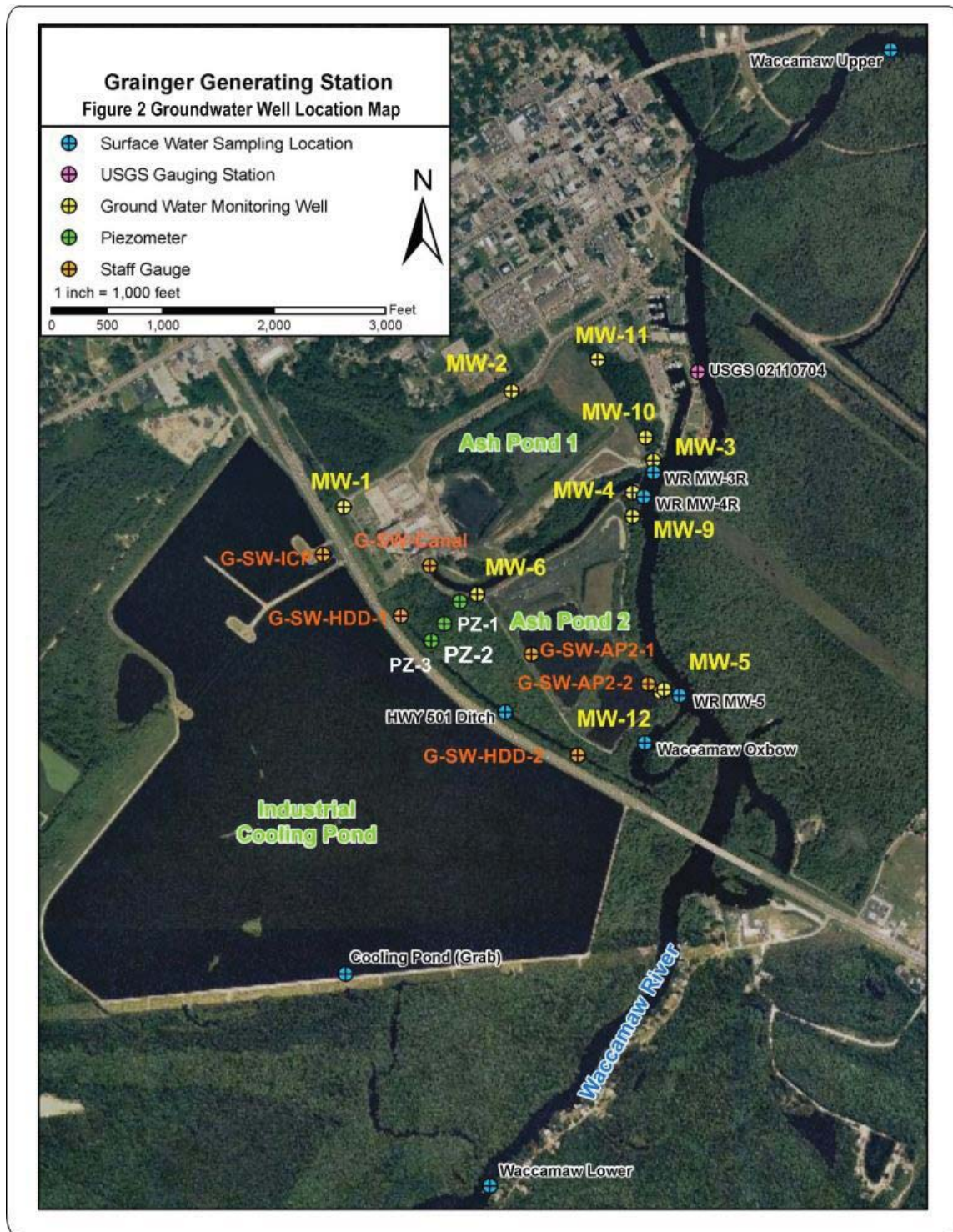
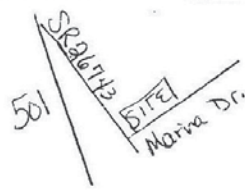


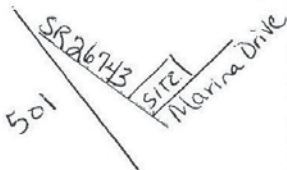
Figure 1
Santee-Cooper Grainger
Generating Station Location Map
Horry County, South Carolina

Drawn By: AMF
Checked By: DGN
Project #: 1089-004.01
Date Created: 04/21/2009
Source: ESRI



Appendix

D H E C P R O M O T E P R O G R E S S P R O M O T E P R O G R E S S			Water Well Record Bureau of Water 2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300																				
1. LOCATION OF WELL County: <u>HORRY</u> System Name: _____ Latitude: <u>33 49 45.624</u> Longitude: <u>79 02 57.888</u> Distance and direction from Rand Intersections: <u>1605 MARINA DRIVE</u> Street Address & City of Well Location: <u>CONWAY</u> Sketch Map: 			4. OWNER OF WELL: <u>SANTEE COOPER</u> Address: <u>ONE RIVERWOOD DRIVE</u> <u>MONCK'S CORNER, SC 29461</u> Telephone No.: _____ Engineer: <u>SANTEE COOPER</u> Address: <u>P.O. BOX 2946101</u> <u>MONCK'S CORNER, SC 29461-2901</u> Telephone No.: <u>843-761-8000</u>																				
2. CUTTING SAMPLES: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Geophysical Logs: <input type="checkbox"/> Yes (please enclose) <input checked="" type="checkbox"/> No			5. WELL DEPTH: (completed) _____ Ft. Date Started: <u>11/10/03</u> <u>15.0</u> Ft. Date Completed: <u>11/10/03</u>																				
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			9. SCREEN Type: <u>SCH 40 PVC</u> Diam.: <u>2 INCH</u> Slot/Gauge: <u>.010</u> Length: <u>10.0 FEET</u> Set <u>5.0</u> Ft. and <u>15.0</u> Ft. NOTE: MULTIPLE SCREENS USE SECOND SHEET Sieve Analysis <input type="checkbox"/> Yes (please enclose) <input checked="" type="checkbox"/> No																				
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			13. ARTIFICIAL FILTER (gravel pack) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Installed from <u>4.0</u> Ft. to <u>15.0</u> Ft. Effective size: <u>1.43</u> Uniformity Coefficient <u>1.30</u>																				
			14. WELL GROUTED? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Sand Cement <input type="checkbox"/> Concrete <input type="checkbox"/> Other _____ Depth: From: <u>0.0</u> Ft. to <u>2.0</u> Ft.																				
			15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ Ft. _____ direction Type well disinfected <input type="checkbox"/> Yes <input type="checkbox"/> No Type: _____ Upon completion <input type="checkbox"/> Yes <input type="checkbox"/> No Amount: _____																				
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3. REMARKS: <u>GG5-2R BENTONITE SEAL FROM 2.0 TO 4.0 FEET.</u> <u>AUGER REFUSAL @ 15.0 FT./TOP OF CASING 12.10 FT.</u>																							

D H E C PROMOTE PROTECT PROSPER			Water Well Record Bureau of Water 2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300																
1. LOCATION OF WELL County: <u>HORRY</u> System Name: _____ Latitude: <u>33 49 39.210</u> Longitude: <u>79 02 42.949</u> Distance and direction from Rand Intersections: <u>1605 MARINA DRIVE</u> Street Address & City of Well Location: <u>CONWAY</u> Sketch Map: 			4. OWNER OF WELL: SANTEE COOPER Address: ONE RIVERWOOD DRIVE MONCK'S CORNER, SC 29461 Telephone No.: _____ Engineer: SANTEE COOPER Address: P.O. BOX 2946101 MONCK'S CORNER, SC 29461-2901 Telephone No.: <u>843-761-8000</u>																
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ATTACHMENT 3

November 25, 2013 Letter to DHEC



One Riverwood Drive
Moncks Corner, SC 29461-2901
(843) 761-8000
P.O. Box 2946101
Moncks Corner, SC 29461-6101

November 25, 2013

Jeffrey P. deBessonnet
Director, Water Facilities Permitting Division
SCDHEC
2600 Bull Street
Columbia, SC 29201

Re: Grainger Proposed Closure Plan – Ash Ponds
SC0001104

Dear Mr. deBessonnet:

Thank you for all of the work that you and other members of the Department have put into evaluating the Closure Plan presented to DHEC last March.

As a result of new opportunities to economically and beneficially use pond ash, and in response to comments provided by the Department and through the public comment process, Santee Cooper has determined that it will amend its Closure Plan to provide for closure of the Grainger ash ponds by removal of the ash from the ponds for beneficial use. We will no longer pursue the Cap and Vault Closure Plan previously submitted to the Department.

We will submit an Amended Closure Plan for the Department's review by January 17, 2014. It will contain information about removal of ash and soil, time frames, sampling and other details of closure.

Since we are amending the Closure Plan, we understand that it will not be necessary to respond to the comments provided regarding the original plan as requested in your letter dated August 8, 2013, but that you may ask us to respond to questions and comments regarding the Amended Closure Plan.

Thank you for your assistance in this matter. If you have any questions, please do not hesitate to contact me.

Sincerely,


T.L. Kierspe

cc: Frank S. Holleman, III, SELC