AMENDED CLOSURE PLAN FOR ASH POND

Plant Gaston

Alabama Power Company

Wilsonville, Alabama

July 2019

AMENDED CLOSURE PLAN
40 C.F.R. § 257.102(b)(3) and ADEM Admin. Code r. 335-13-15-.07(3)(b)3.

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Table 1 Closure Schedule

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AMENDED CLOSURE PLAN CHECKLIST
40 C.F.R. § 257.102(b)(3) and ADEM Admin. Code r. 335-13-15-.07(3)(b)3.

1. Introduction

This Amended Closure Plan has been prepared to support the permit application previously submitted to the Alabama Department of Environmental Management (ADEM) for the CCR Surface Impoundment known as the Plant Gaston Ash Pond, located in Wilsonville, Shelby County, Alabama. The permit application was submitted in accordance with ADEM Admin. Code r. 335-13-15-.09(1)(c). This Amended Closure Plan, along with other documents, is intended to supplement the previous submittal in response to the ADEM letter dated May 24, 2019 which provided response comments to the original application.

2. General

The Plant Gaston Ash Pond was originally constructed in the early 1950's and was designed to receive and store coal combustion residuals produced during the electric generating process at Plant Gaston, along with low-volume wastes and stormwater sump flows from the plant. It currently stores approximately 24,800,000 cubic yards of CCR.

The Ash Pond is approximately 270± acres in size. The basin was formed by excavating predetermined zones to elevations ranging from 389 ft to 418 ft, with much of the center zone having no excavation. Maximum elevations in the center zone were approximately 420 ft. Material for the perimeter embankment construction was excavated from within the ash pond area adjacent to the embankments. The dike fill material consists mainly of clay. The depth of the soil fill extends up to depths of approximately 50 feet at its deepest. The South Dike was constructed at an elevation of 445 ft, but has been raised as high as 449 ft in some areas. It has a maximum height of approximately 50 feet. The West Dike was constructed at an elevation of 445 ft with a maximum height of 30 ft. The North Dike was constructed at elevations up to 445 ft, with later raises bringing it to a maximum elevation of 447 ft. It has a maximum height of 25 ft.

In the late 1980's, the impoundment was reconfigured to the arrangement that existed at the time the pond ceased receiving CCR. Ash was sluiced into one of two settling ponds located at the eastern edge of the pond. When one cell filled, the sluice was diverted to the alternate cell while the filled cell was dredged. The dredged ash was conditioned and dry stacked further west in the pond. The sluice water, after leaving the settling pond, was diverted to a canal that runs along the perimeter of the pond boundary to another low energy area at the western pond edge where further settling of fines takes place. From there, the water entered another canal which leads to the former discharge structure located at the Coosa River. Water is now diverted to a new NPDES discharge

point, but an auxiliary spillway was constructed near the former discharge structure to manage design storm flows.

The Plant Gaston Ash Pond will be closed by leaving CCR in place, with consolidation of CCR to reduce the closure footprint to approximately 193 acres. The Ash Pond will initially be dewatered sufficiently to remove the free liquids and to provide a stable base for the construction of an ash containment structure for the consolidated footprint, excavation of ash outside the consolidated footprint and, construction of the final cover system. CCR will be excavated from the area outside the consolidated footprint, transported, and disposed of in the consolidated footprint to create a subgrade for the final cover system. Excavation will include removing all visible ash and over excavating into the subgrade soils. Additional details about the dewatering and construction methods to be used can be found within this Amended Closure Plan.

The final cover will be constructed to control, minimize or eliminate, to the maximum extent feasible, post closure infiltration of liquids into the waste and potential releases of CCR from the unit. This will be prevented by providing sufficient grades and slopes to: 1) preclude the probability of future impoundment of water, slurry, or sediment; 2) ensure slope and cover system stability; 3) minimize the need for further maintenance; and 4) be completed in the shortest amount of time consistent with recognized and generally accepted good engineering practices.

3. Notification

Notification of intent to close the Plant Gaston Ash Pond was placed in the plant's Operating Record on April 15, 2019. The notice of intent was subsequently submitted directly to ADEM. The surface impoundment is closing under the requirements of § 257.101(a)(1) and r. 335-13-15-.07(2)(a)1. Closure of the surface impoundment will be conducted under §257.102(d) and r. 335-13-15-.07(3)(d), *closure performance standard when leaving CCR in place*. As described in more detail below, the surface impoundment will be closed in a manner that will control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated runoff to the ground or surface waters or to the atmosphere. Closure will also preclude the probability of future impoundment of water, sediment or slurry. Measures will be taken during design and construction of the closure system that provide for major slope stability to prevent the sloughing or movement of the final cover system. Closure will also minimize the need for further maintenance of the CCR unit.

Major closure activities will commence following receipt of a CCR permit from ADEM pursuant to r. 335-13-15-.09.

4. Written Closure Plan – § 257.102(b)(1)(i),(iii) and r. 335-13-15-.07(3)(b)1.(i),(iii)

a. Overview

A written closure plan to comply with § 257.102(b) was posted to the Plant Gaston Operating Record on October 17, 2016. A revised written closure plan incorporating reference to applicable ADEM Administrative Codes was submitted as a part of the original CCR Permit application.

As required by § 257.102(b)(3)(ii) and r. 335-13-15-.07(3)(b)3.(ii), the written closure plan must be amended whenever (i) there is a change in the operation of the CCR unit that would substantially affect the written closure plan or (ii) before or after closure activities have commenced when unanticipated events necessitate a revision of the written closure plan. The time frames for amendment to the written closure plan is in accordance with those specified in § 257.102(b)(3)(iii) and r. 335-13-15-.07(3)(b)3.(iii).

b. Closure Steps

<u>Ash Pond Cessation</u>

The ash pond ceased operation and receipt of CCR materials and other waste streams in April 2019 pursuant to state and federal regulations (r. 335-13-15-.07(2)(a)1. and § 257.101(a)(1)).

In advance of the ash pond operation cessation, APC modified plant operations for CCR handling from a wet sluicing operation to a dry CCR handling operation where the CCR is disposed of in an offsite lined solid waste landfill or sold for beneficial reuse. This plant modification required the design and construction of infrastructure and equipment to accomplish this changeover before April 2019. Planning for diversion of wastewater streams from the ash pond required the construction of a Wastewater Management Pond (WMP) as part of the Water Treatment Facility. Plant Gaston is currently permitted to discharge wastewater effluent via DSN004 to the Coosa River under the NPDES Permit AL0003140.

A mechanical water treatment system using physical and chemical treatment processes was added for the treatment of ash pond free water and interstitial water in advance of ash pond dewatering activities. Ash Pond dewatering will commence under the revised Plant Gaston Ash Pond Dewatering Plan last submitted to ADEM on July 9, 2019, with approval pending.

Transmission Line Modifications

Modifications to the 230 kV transmission lines and support structures along the eastern end of the ash pond were required to allow for construction of the ash pond closure. This included the construction of new higher support structures located south of the ash pond and removal of the intermediate support structures located within the east end of the ash pond. This work was completed in May 2019.

Demolition of Structures

Demolition of structures and utilities within the ash pond were required prior to significant ash grading activities. Demolition of the fly ash silo located in the eastern end of the ash pond was completed in June 2019. The water treatment building and associated tanks located along the north dike of the ash pond were also demolished and removed from the ash pond in June 2019.

NPDES Permit application submittal

A NPDES permit renewal application was submitted to ADEM on May 8, 2018 that includes operational changes required due to the federal CCR rule and the Effluent Limitations Guidelines (ELG) Rule. The existing NPDES permit for the facility has been administratively continued and remains in effect while the renewal permit application is being reviewed. Wastewater streams have been rerouted from the ash pond to the Wastewater Management Pond (WMP)for treatment in advance of the ash pond closure.

Dewatering Plan Submittal

The revised Plant Gaston Ash Pond Dewatering Plan was last submitted to ADEM on July 9, 2019.This plan will allow for dewatering both free water and interstitial water in the ash pond to an elevation below 426 feet. Water removed from the ash pond will be pumped to the mechanical treatment system for treatment and discharge under the existing site NPDES permit. This system will include equalization, pH neutralization, flocculation, solids separation, and clarification for discharge to the Wastewater Management Pond upon meeting discharge limitations. Monitoring will be performed in accordance with this Dewatering Plan and the existing NPDES permit.

2. *Contractor mobilization*

The Contractor mobilized in February 2019 to commence preparatory work on access improvements, drainage channel improvements within the ash pond and associated light clearing.

3. Vegetation management – burning/disposal activities throughout closure

Woody vegetation outside of the ash pond limits will be managed as vegetation and wood waste by composting (short term to reduce mass), chipping for use on site as construction best management practice (CBMP) measures, burning through approved methods, or disposing of at an off-site landfill. Woody vegetation waste from within the ash pond limits may be mechanically screened to remove ash, composted (short term to reduce mass), burned through approved methods, or disposed of at an off-site landfill.

The Contractor anticipates utilizing an air curtain destructor (ACD) for all vegetation burning. An ACD permit will be obtained through the local issuing authority with Alabama Forestry Commission approval. Burning with an ACD is allowed during the period November 1 through April 30. This corresponds to the period outside of burning restrictions for Shelby County, unless the Alabama Forestry Commission issues a fire danger warning or alert, if the area is under a current air stagnation advisory issued by the National Weather Service or during a "drought emergency" declared by the Governor due to unfavorable conditions for burning.

The ACD shall be constructed, installed and operated in a manner consistent with good air pollution control practice for minimizing emissions of fly ash and smoke. The cleaning out of the ACD pit shall be performed in a manner to prevent fugitive dust. Burning may be subject to ADEM rules under the Air Division, Air Pollution Control Program Administrative Code Chapter 335-3-3 Open Burning and Incineration, local requirements and any burn permit conditions.

4. Clearing/grading

Minor clearing within the ash pond has commenced along the toe of the ash stack to improve and widen existing access routes for construction equipment and to allow access to the existing drainage channels for cleanout. This vegetation has been stockpiled in the East Area for processing and burning as discussed above. Grading activities have focused on access improvements and maintaining drainage channels to allow gravity flow of stormwater to the Clear Pool area located at the western end of the ash pond.

5. Additional pre-dewatering site specific work

Upon approval of the Plant Gaston Ash Pond Dewatering Plan last submitted to ADEM on July 9, 2019, the free water within the ash pond will be lowered to allow for active interstitial dewatering. A floating barge with a suspended pumping system was installed in the Clear Pool area to

manage water levels within the ash pond as the outlet control structure has been plugged in advance of ash pond closure. This system allows water conveyance from the Clear Pool area via approximately 7,500 linear feet of 14-inch high density polyethylene (HDPE) forcemain to the mechanical water treatment system located east of the ash pond.

Existing free water is generally located within interior ditches, perimeter channels, and in the Clear Pool. Initially, pore water and free water, not utilized for dust control, will be removed from the CCR and from areas within the ash pond and transferred in a controlled manner to the Clear Pool area. Any remaining or excess water within the Clear Pool will be transferred to the mechanical water treatment system prior to discharge. Initial dewatering of the excavation areas will consist of conventional methods such as rim ditching, cross ditching, sumps, stacking, and windrowing of the in-situ material to relieve surface and interstitial water.

Upon approval of the Plant Gaston Ash Pond Dewatering Plan last submitted to ADEM on July 9, 2019, the free water within the ash pond will be lowered to allow for the installation of an active interstitial dewatering system. The floating barge system within the Clear Pool will continue to operate to manage stormwater flows from rainfall events and convey water to the treatment facility. In mass excavation areas, deep wells may be installed to dewater the CCR material ahead of the excavation. As the excavation progresses to lower elevations, well points will be installed to relieve the CCR material of excess water. Installation of the well points shall be repeated with each excavation pass towards the bottom design elevation as needed.

CCR excavation will occur in three distinct areas of the ash pond: West Area, East Area and South Dike Area along the Coosa River. Excavation activities are anticipated to commence in the West Area working from the northern end and continuing in a generally southward direction. The wet CCR will be excavated from these areas for initial dewatering and then loaded, hauled, and placed in the East Area closure-in-place fill area for additional dewatering and processing with drier CCR. As the CCR is excavated and removal verified, soil borrow material from onsite or off-site sources will be hauled in directly to the backfill areas to meet the design backfill grades.

Grading activities will commence simultaneously on the western half of the Ash Stack. This grading would primarily include drier CCR that will be excavated, hauled, and placed within the designed fill areas on the north side of the Ash Stack. This excavation will continue slightly ahead of the West Area's excavation to prevent sloughing of the Ash Stack slope toe material as the West Area excavation operation approaches.

As the wet material from the West Area is hauled to the East Area for drying operations, an additional excavation fleet will simultaneously be excavating dry CCR material from the East Area to be placed and processed with saturated material for final placement. Excavations of the East Area will be backfilled with soil from onsite or offsite borrow areas to work toward establishing a temporary stormwater pond for temporary storage over the duration of the project.

The excavation efforts will also focus heavily on the South Area as soil fill operations continue in the East Area. Deeper excavations in this area are anticipated to encounter interstitial water as operations continue. Dewatering study data will be utilized in developing a dewatering plan comprised of deep wells and well points for a water removal systems coupled with geotechnical monitoring of the excavation slopes. This plan will determine the detailed construction operation in terms of excavation depths per pass and the utilization of toe drains with pumps and similar methods. The excavated materials from this area will be relocated to the East Area fill area. Here it will be mixed with drier material from the previously placed East Area and West Area excavated material to accelerate moisture conditioning.

Excavated material from the West Area will be placed in the East Area and mixed with drier excavated CCR from the East Area. Higher moisture content CCR from the South Area will be mixed with drier CCR from this same area to condition the material for placement and compaction. This material will be placed and compacted as fill material meeting the project moisture and compaction requirements.

Finish grading will be an ongoing process throughout the project as excavation and fill areas approach final design grade elevations. Grading for each area will work from the fill limits and progress upward towards the high point of the area. The CCR fill will be graded to meet the elevations of the four to one (4H:1V) sides slopes with 20 foot wide terraces located at 20 vertical foot intervals.

The graded surface shall be free from irregular surface changes and shall not vary more than 0.10 feet above or below required elevations where shown on the Drawings unless design changes are needed. Material located within 1-foot of geosynthetics shall have a maximum particle size of 3/4 inch in diameter with a maximum protrusion of ¼ inch above surrounding grade. No sharp edges shall be exposed at the subgrade surface.

Shrinkage due to compaction and dewatering can be accommodated by reducing the ultimate height of the East Area fill as needed to adjust to a slightly smaller volume. Final cover system installation will be

accomplished in phases and as soon as practical as areas reach final elevations in order to cover the material to reduce erosion and control fugitive dust.

The first phase of the final closure system installation will begin within the northwest Ash Stack area at the site's westerly high point intersection with the southwest Ash Stack area. Grading and installation of the closure system will progress from this point to the east. Alternating efforts will work westward toward the West Stormwater Pond (see Closure Plan Drawings sheet GAS_3.2.4_400). At completion of the permanent closure system installation within the West Stormwater Pond, an additional liner will likely be installed for protection of the final cover system for stormwater run-off storage as construction continues.

The second phase of final grading and final cover system installation will work the southwest Ash Stack area drainage ditch grade break point progressing west until tying into Phase 1 closure system termination point. From there, installation will continue from the grade break in the southwest Ash Stack area and move east towards the southeast Ash Stack area.

As excavation and fill operations reach final design grades in the northeastern Ash Stack area, the third phase of final grading and closure system installation will progress from the northwest Ash Stack area, moving eastward towards the East Area. Phase 3 of the final grading and final cover system installation will begin near completion of the northeast Ash Stack area closure and move south toward the South Dike. At completion of the final cover system installation, an additional liner will likely be installed within the East Area for final cover system protection and added non-contact water holding storage if needed.

Next, the final cover system installation operation will continue at the Phase 2 termination point and work eastward towards the East Area. During Phase 4 the installation operation will be working simultaneously with the excavation & fill operation of the South Stormwater Pond. This combined effort will be important in final material balancing efforts as design grades are likely to require adjustment. As the final grading and final cover system materials installation operation moves eastward, it will transition into the final Phase 5 application in the South Stormwater Pond. During this phase, the temporary liner systems within the East and West Stormwater Ponds will be converted into the final design state.

c. Procedures During Closure

i. Dewatering

The Contractor will use conventional dewatering methods for initial dewatering of shallow/near surface CCR excavation and a more active

method to dewater deeper CCR excavation. Additionally, pumping of surface water will be performed in the open-water pond in the West Area.

The conventional dewatering method involves gravity (passive) dewatering. An excavator is typically used to excavate CCR and form a network of gravity trenches. The excavated wet CCR is stacked to allow for water to drain and dry prior to loading it into a truck to be hauled away. Windrowing and mixing with the dry CCR can further condition the wetter material. Additionally, rim and cross ditches shall be excavated to promote interstitial water removal.

The active dewatering methods that may be used consist of vacuum wellpoints and deep wells with submersible pumps. The vacuum wellpoint system will contain wellpoints that extend approximately 20 feet (vertical) below the cut-slope surface at the excavation benches. The deep wells with submersible pumps will extend to the bottom of ash for additional water drawdown as the excavation progresses.

The Plant Gaston Ash Pond closure project is using a water treatment system for treating contact and dewatering liquids from the ash pond construction. Water from the ash pond will be pumped to the mechanical treatment system via approximately 7,500 linear feet of 14-inch HDPE forcemain for treatment and discharge under the existing NPDES permit. This system will include equalization, pH neutralization, flocculation, solids separation, and clarification for discharge to the WMP and permitted NPDES discharge point upon meeting discharge limitations. The treatment system has a capacity to treat 2000 gallons per minute (gpm). Monitoring of the effluent will be performed in accordance with the Plant Gaston Ash Pond Dewatering Plan and the existing NPDES permit.

In addition to the 2,000 gpm wastewater treatment capacity, free water drawdown rates will also be controlled by reasonable drawdown rates considering dike stability. The phreatic surface within the dikes may be affected by fluctuations of the water level within the ash pond. As ash pond water levels decline and ash is removed, the dike slopes will be exposed. This exposed slope will be monitored and protected from the dewatering (such as sloughing), and from equipment and human traffic. An initial maximum drawdown rate of 0.5 foot per day (1 foot per five-day work week) will be observed for dike stability. Maximum allowable pumping and phreatic drawdown rates may be modified if field stability assessments of the existing ash pond dike performance prove better than anticipated conditions, subject to review and approval by the Owner and Engineer.

ii. Liquids Management

Contact water shall be pumped through piping, in a controlled effort, to the west impoundment area where it shall be utilized for dust control within the ash pond or pumped to and treated by the mechanical treatment system. Once the contact water is treated, the water will be discharged. As a preventative measure, an automatic recirculation option is constructed as part of the treatment system to recirculate effluent not meeting the discharge limitations back into the ash pond for pumping back through the treatment system.

The turbidity set point will be determined from a total suspended solids vs. turbidity correlation curve developed from data collected in the effluent that is recirculated in the dewatering system. This curve will be periodically refined, as needed, over the life of the ash pond dewatering.

Compliance monitoring and frequencies of various parameters based on NPDES permit requirements at DSN0004 limits will be conducted in accordance with Table 1 of the Plant Gaston Ash Pond Dewatering Plan. In-process monitoring and frequency of various parameters at the mechanical treatment system prior to discharge will be conducted in accordance with Table 2 of the Plant Gaston Ash Pond Dewatering Plan. In-process monitoring of various parameters in the WMP after plant wastewater and mechanical treatment system effluent have commingled will occur twice a month. In-stream monitoring of various parameters during ash pond dewatering will occur once a month and samples will be collected in the Coosa River upstream of the plant and downstream of the permitted discharge point, DSN004.

Contact water that is unable to flow directly to the west impoundment area will be directed to temporary intermediate holding ponds/ditches and be used for dust control within the ash pond. Remaining contact water in the holding ponds/ditches shall be later pumped to the west impoundment area or directly to the mechanical treatment system.

Non-contact water from areas that are non-CCR or have a final cover system installed will be collected and stored in temporary lined ponds established in the perimeter ditches or in the East and West Areas. This water will be managed as stormwater and discharged according to the NPDES permit for construction activities. If the location of the collected stormwater does not allow discharge without significant pumping and piping then it may be used for dust control or sent to the mechanical treatment system for treatment and discharge.

iii. Dredging and CCR Removal Activities

The closure approach employed for the Plant Gaston Ash Pond includes excavation of CCR in areas of the ash pond and consolidation of the CCR into a smaller footprint for closure with a final cover system. Excavations in the West, East and South areas will remove CCR to the bottom of pond down to existing soils. The overall ash pond is approximately 270 acres and the consolidated footprint was designed to be approximately 193 acres. This consolidated footprint is based on location of the existing bottom of the ash pond and may vary based on actual field conditions. Design decisions were made in the planning stages to excavate the identified areas to increase setback buffers from the consolidated footprint resulting in the following:

- 995 feet setback to adjacent residences in the west,
- Setbacks of 360 (at the boathouse cove) to 520 feet from the Coosa River along the South Dike
- Additionalbuffer of approximately 400 feet in the East Area

Removal of CCR will be performed using a combination of conventional and modified earthwork excavation equipment. Excavators working from existing or modified stabilized areas will excavate CCR and place it in off-road dump trucks or stockpiled to decant for subsequent loading and hauling for placement in the consolidated footprint.

Dredging was performed to widen and deepen the west impoundment area during pre-closure activities. Further dredging is not anticipated as water levels are reduced.

Ash will be excavated to the bottom of pond plus an additional six inches of subgrade soil in the excavation areas as shown in the closure design drawings. Excavation depths of 35 to 55 feet are anticipated in the East, up to approximately 55 feet in the South closure by removal areas and approximately 10 to 35 feet in the West Area.

iv. CCR Removal Verification Protocol

1. The ash pond closure design includes relocation of CCR from some areas, thus requiring verification and documentation that CCR have been removed. Construction Quality Assurance (CQA) personnel will document removal of CCR material. The CCR removal verification procedure is outlined in the CQA Plan and as summarized below. For CCR removal preparation and prior to CCR removal, the following steps shall be performed:

- Review topographic mapping, aerial photography, and boring logs to estimate the pre-placement topography and/or CCR/soil interface.
- Prepare a CCR unit map illustrating a grid spacing of 100 feet for Closure by Removal areas. Each grid point will be assigned a unique alphanumeric label for reference and documentation of CCR removal verification.

2. Steps to visually verify CCR removal:
   - CCR will be excavated until there is no visible CCR present. This surface will be referred to as the bottom of ash pond.
   - CQA personnel will locate each grid point by GPS or survey control, and estimate the elevation in the field.
   - CQA personnel will observe the surface area represented by the grid point to note if visible CCR is present at the surface. Observations will include, but not be limited to, taking photographs, classifying soils by the visual-manual classification method (ASTM D2488), and describing soil color. CQA personnel will document observations in field logs or reports. The classification indicator for fly ash will be grey to black silt-size particles with very low to no plasticity. The classification indicator for bottom ash will be grey to black, sand to gravel-sized particles.
     i. If CCR is present, the location should be documented, and CCR removal should continue until soils are observed. This step will be repeated until no CCR is visible.
     ii. If the observations and evaluations above indicate visual CCR is not present at the final excavated surface for the grid point, CQA personnel may conclude the primary source is removed at that location.
3. Final removal and overexcavation
   - After completing the steps above, the bottom of ash pond surface will be surveyed.
   - The excavation will then continue to a depth of 6 inches below the bottom of ash pond surface. This surface will be referred to as the bottom of excavation and final excavated subgrade. Excavated soil will be placed in the onsite CCR consolidated footprint closure area.

- The color of the exposed soil will then be specified and documented by using the Munsell color system in accordance with ASTM D1535.
- At least one hand auger will be advanced to a depth of 12 inches below the final excavated subgrade for verification of color.
- The bottom of excavation surface will be surveyed and confirmed to be a minimum of 6 inches below the bottom of ash pond surface.

v. CCR Placement

The Contractor will place all compacted fill material at locations and to the required elevations as shown on the Drawings. Prior to filling, the subgrade surface will be scarified to depth of two (2) inches, then fill materials will be placed in layers not more than eight (8) inches in loose depth for material to be compacted by heavy compaction equipment and not more than four (4) inches in loose depth for material compacted by hand-operated tampers. Each lift will be compacted to a minimum of 95 percent (95%) of the material's maximum dry density and to within 3 percent (3%) of optimum moisture content as determined by ASTM D698.

Fill shall be placed in a manner and sequence that shall provide proper drainage at all times, and uniformly grade the top of compacted fill material to the required elevations. Fill material shall not be placed on surfaces that are muddy, frozen, or contain frost or ice. Areas in the bottom of the ash pond may experience wet conditions where a rock fill layer may be placed for stabilization prior to soil backfilling. The Contractor's CQC Team shall observe and document the condition of the base surface and the surface of the previous lift. Wet material may be removed and replaced, placed in temporary windrows, or scarified and air dried. Materials not meeting density specifications shall be scarified, the moisture content adjusted, and the area re-compacted and re-tested.

Field quality control testing shall be performed by the Contractor's CQC Team. The CQA Team will be responsible for verification of the materials and constructed work with the Specifications.

CCR design parameters presented below were obtained from geotechnical investigation and laboratory analysis of the CCR within the ash pond. The following represent the parameters of the CCR:

Density/Unit Weight

- In-Situ Dry Unit Weight: Average of 63 pounds per cubic foot (pcf); range of 45 pcf to 86 pcf
- In-Situ Total Unit Weight: Average of 98 pcf; range of 79 psf to 111 pcf
- Maximum Realizable Dry Density: 74 pcf
- Minimum Realizable Dry Density: 35 to 54 pcf for ash containing 80 to 95 percent fines passing the #200 sieve (i.e. fly ash) and 52 to 73 pcf for mixed ash containing 60 to 70 percent fines passing the #200 sieve.

Shear Strength

- Undrained Shear Strength in Soft Ash: Average 545 psf; range of 345 psf to 2,800 psf
- Residual Undrained Shear Strength in Soft Ash: Average 70 psf; range of 50 psf to 940 psf
- Drained Shear Strength – Effective Stress Friction Angle, φ′ Firm Ash: 36 degrees with no effective cohesion (c′ = 0); range of 36 degrees to 42 degrees

  Soft Ash: 27 degrees with no effective cohesion (c′ = 0); range of 26 degrees to 38 degrees

Settlement Parameters

- Constrained Modulus of Deformation, M:
  - *Firm Ash: Average: M = 460 tons per square foot (tsf); range of 100 tsf to 1,400 tsf*
  - *Soft Ash: Average: M = 105 tsf; range of 15 to 300 tsf*
- Primary consolidation:
  - *Firm Ash:*

  Coefficient of compression, Cc = 0.18
  Coefficient of recompression, Cr = 0.019
  Coefficient of consolidation, Cv = 4.1 ft2/day
  Overconsolidation ratio, OCR = 10

  Soft Ash:
  Coefficient of compression, Cc = 0.43
  Coefficient of recompression, Cr = 0.026
  Coefficient of consolidation, Cv = 3.4 ft2/day
  Overconsolidation ratio, OCR = 1.4; range of 0.7 to 2.1

Seismic Parameters

- Shear wave velocity, Vs: Firm Ash: Vs = 1,300 feet per second (ft/s); range of 1,000 to 1,500 ft/s

  Soft Ash: Vs = 700 ft/s (average); range of 450 to 1,000 ft/s

- P-wave velocity, Vp = 1,500 feet per second; range of 600 to 3,000 feet per second for Poisson's ratios of 0.3 to 0.4.

The above parameters were used in the design engineering to arrive at a stable design for the final stack

The Contractor shall implement procedural controls to limit the amount of exposed areas at any one time. Existing vegetation will be left in place as long as possible, minimizing the amount of CCR exposed at any one time. CCR will be stabilized for dust control, erosion and sloughing with the dispersion of water using water trucks and water wagons. Extreme weather conditions may require the use of polymers and products such as Wind Defender when conventional methods are not successful. Temporary liner systems or tarps may be used to cover stockpiles exposed for longer periods to control dust, prevent erosion and sloughing.

Handling of CCR for closure will be performed in a controlled manner. CCR excavation and handling will be performed using excavators, articulated off-road dump trucks, tractors with pull behind scrapers. Dry and moist CCR will be excavated and loaded directly into trucks or scrapers for placement in the fill areas or stockpiled for future placement, mixing with wet CCR or fine grading placement. Hauling and stockpiling operations will require dust control measures with stockpiles potentially covered with Wind Defender or temporary liner materials for longer storage to control rainfall infiltration and erosion.

Wet CCR may be casted and stacked for decanting prior to hauling and placement. This material may also be loaded into trucks and/or scrapers and moved to an appropriate decanting area in the East Area for windrowing, turning and mixing with drier CCR material to relieve surface and interstitial water. Care will be taken to minimize spillage within the ash pond, damage to interior roads and increased maintenance of access and drainage channels.

Twenty-one (21) piezometers were installed within the ash pond in 2017 and 2018. Ten (10) were installed from June through July of 2017, of which 6 wells were installed within the ash or soil and 4 were advanced

into bedrock. Eleven (11) wells were installed from February through March 2018, of which 8 wells were installed within the ash or soil and 3 were installed into bedrock.

Fourteen (14) wells were selected for long-term water level monitoring observations starting in May 2018: 11 observation wells (7 in ash/soil, 4 in bedrock) and 3 monitoring wells located outside the ash pond around the perimeter. Water level transducers were programmed to record groundwater elevations, barometric pressure and temperature.

This data is important for dewatering activities, performing CCR excavations and targeting dewatering levels for slope stability. Data collection will continue into the construction period with additional equipment planned to monitor for changing conditions due to dewatering and excavation.

The ash pond is approximately 270 acres in total size. With the planned closure, the consolidated CCR footprint was designed to be approximately 193 acres. This consolidation area may vary slightly due to the actual location of the excavation limits and the bottom of ash pond location. CCR will be placed in a consolidated footprint from excavations of the West Area, eastern end of the East Area and the excavation along the South Dike.

Hauling distances vary across the site depending on the location of the CCR excavations and placement. The longest CCR haul distance is that from excavations in the West Area and placement in the East Area. An average haul distance of 5,400 feet can be expected with some distances as high as 7,000 feet.

If CCR from the center West Area is placed on the north side of the Ash Stack then an average hauling distance of about 2,800 feet could be expected. CCR grading from the western slopes of the Ash Stack for placement on the north side of Ash Stack would be an average of around 1,000 feet or an average of about 3,600 feet for placement in the East Area.

The general dimensions of the East Area are approximately 2,000 feet long by 1,600 feet wide. Excavations in the East Area for the eastern end and along the South Dike would average 1,000 feet and 800 feet, respectively.

Soil hauling from the onsite borrow area to the eastern end of the East Area is a haul distance of about 4,100 feet. The West Area and the South

Dike area soil backfill haul distance from the onsite borrow area would average 1,900 feet and 2,800 feet, respectively.

Stormwater Management, interstitial water controls and construction sequencing are important factors for preventing failures during construction.

Stormwater

The Updated Inflow Design Control System Plan: Hydrologic and Hydraulic Calculation Summary dated June 5, 2018 performed for the ash pond shows that the existing ash pond will be able to safely manage flow from a Probable Maximum Precipitation (PMP) 6-hour storm event consistent with the current hazard classification for the ash pond. Construction of the ash pond auxiliary spillway completed in January 2018 comprised of an articulated concrete block revetment that offers and controlled discharge with protection from scour and erosion if the PMP storm event was to occur during construction. During construction, the existing stormwater management within the ash pond manages this PMP storm event without overtopping. Additional water storage is gained as the CCR excavations are performed allowing for better stormwater performance as construction continues.

Interstitial Water Control

Control of interstitial water is important for slope stability during CCR excavations near or below the phreatic surface. A dewatering system will be implemented to allow for drawdown of the water surface to allow for safe access and excavation. Water will be pumped to the mechanical treatment system for treatment or to temporary lined ponds constructed in the East and West Areas for contact water. The installation of a toe drain system with pump stations at the toe of excavation at the bottom of pond in the West Area, eastern excavation area and along the south dike for water collection and conveyance will provide a water removal system as the areas are backfilled with soil. The pump stations will include risers that will extend up to the surface after construction to support access for maintaining the pump systems into post-closure if needed.

Soil Backfill and Buttressing

The excavated CCR slopes were analyzed for stability and show acceptable factors of safety with management of water levels. The design includes soil backfill in the closure by removal areas offering additional buttressing of the slopes to support long-term performance.

Construction phasing is another important aspect of excavation stability in some areas. Specifically, the design requires that the western slope grading of the Ash Stack be performed to attain 4H:1V slopes in advance of excavation at the western toe of the Ash Stack.

Excavation Slope Monitoring

Water levels and pore pressures, slope deflection, settlement and changing conditions will be monitored during excavation and grading activities. Geotechnical instrumentation shall be included in the project to monitor these elements and provide automated notifications when conditions trigger predetermined set points. During construction this instrumentation and data collection will be intensive with some strategic instruments extending into the post-closure period.

vi. Fugitive Dust Control Plan

This site has a variety of identified potential fugitive dust sources. The dust sources anticipated on this project include:

- CCR excavation in the drier portions of the impoundment
- Existing CCR areas not covered with vegetation
- Designated areas where CCR is being stockpiled for dewatering purposes
- Transfer of CCR from the excavation area to the fill area around the existing stack
- Transport of offsite borrow soil material to the designated stockpile area
- Borrow Material Stockpile Area
- Transport of borrow soil material from the stockpile area to soil backfill areas onsite
- Placement of sand, hydro-binder, or similar products in the proposed CCR capped area

To combat fugitive dust during the excavation and placement of CCR, the Contractor will utilize a variety of methods including:

- Limiting vehicular traffic to active areas of the site
- Limiting the amount of area exposed at any one time
- Leaving existing vegetation in place as long as possible
- Minimizing the amount of CCR exposed at any one time
- Dispersion of water with water trucks and water wagons

The Contractor will implement procedural type controls which limit the amount of area exposed at any one time. Existing vegetation will be left in place as long as possible, minimizing the amount of ash exposed at any one time. Conventional dust control for the project will include the dispersion of water with water trucks and water wagons.

When practical and feasible, irrigation systems will be used to control dust in exposed areas where minimal construction activity is taking place. Extreme conditions may cause for the use of polymers and products like Wind Defender® when conventional methods are not successful. Each activity and area of construction will be evaluated and addressed by each area's specific characteristics and needs.

Water for the ongoing dust control efforts will be provided by multiple sources depending on which stage of construction. During the initial and intermediate stages of construction, utilization of the temporary holding ponds will supply a majority of the water needed. Water provided from the river and potentially the plant's WMP will also be utilized as needed. As the project progresses and CCR is covered with the designed final cover system there will be less volume of water required for dust control. However, dust suppression will still be needed until project completion. During these final stages of construction, clean water collected and held in temporary holding areas atop the closure turf can also be utilized as a source of water to assist with dust control.

The owner and the Contractor will assess the effectiveness of fugitive dust control measures by performing visual observations of the ash pond and surrounding areas and implementing appropriate corrective actions, as necessary. The Contractor shall maintain logs to record daily observations and application/utilization of fugitive dust control measures.

If fugitive dust complaints are received, the owner will document and investigate the complaint with the Contractor's cooperation. The Contractor will implement corrective actions as needed.

vii. Stormwater Management

Management of non-contact stormwater will be implemented to reduce the amount of stormwater requiring treatment through the onsite mechanical treatment facility as areas of CCR are closed, either by excavation and removal or with final cover system materials. Temporary dams will be established in the perimeter ditches to capture the stormwater before entering areas still containing ash. This water will then be pumped to an existing stormwater run-off area. As more areas of CCR are covered with closure turf, additional temporary dams will be

established, and additional pumps utilized to continue this process until the project is completed and stormwater can be discharged as designed.

viii. Equipment Decontamination

The CCR will be transported only within the current ash pond boundary, and the equipment used for transportation will be stored in a prepared area of the ash pond. Prior to leaving the project area, all equipment that has worked within the ash pond will go through an extensive wash down process onsite to mitigate any CCR from the leaving the project.

Borrow soil material will be imported from onsite or offsite borrow areas for backfilling the West, South, and East closure by removal areas. Whenever possible, the Contractor will deliver the borrow soil material directly to the location of the backfill operations, and make every effort to keep the delivery trucks from coming into contact with CCR material. Trucks entering and leaving the site will travel through an established construction exit and will be checked for CCR contamination prior to leaving the impoundment.

ix. Site Security

Existing site security is enforced full time as an operational practice by Plant Gaston personnel. Construction personnel undergo background checks and drug screening and require registered badges and identification to enter the Plant site. Additional security measures have been developed by the Plant to surveil the ash pond area using real-time radar and camera based security systems. Additional measures may be employed to include security fencing along the Coosa River and other physical access controls.

The ash pond closure Contractor will employ access control measures for ingress and egress to and from the ash pond. Physical barriers will be used to separate the construction area from Plant operations and to control working areas.

x. Groundwater Monitoring

A groundwater monitoring plan was submitted with the original Gaston Ash Pond permit application. Please refer to Appendix 8 of the original permit application.

xi. Operational Inspections

Inspections will be conducted by a Qualified Person at intervals not exceeding 7 days to look for appearances of structural weakness and for proper operation of all outlet structures maintained for use during closure. Furthermore, an annual inspection will continue to be conducted by a qualified Professional Engineer throughout the closure process.

d. Closure Design Features

Grading

The grading approach was designed using the ADEM closure performance standards and drainage design constraints. The CCR fill was designed with maximum of 25% (4H:1V) sides slopes with horizontal terraces every 20 feet of rise in elevation. These terraces are 20 feet wide with a 5% cross slope and 3% slope along the drainage flow line. The top of the ash fill was designed with 5% minimum slopes with a high ridge in the center directing drainage flow to the perimeter and into the down slope channels.

The perimeter channels were designed sloping from the Coosa River to the high point located at the northwest cover of the existing Ash Stack. The Federal Energy Regulatory Commission (FERC) provides licensing and oversight of operations of hydroelectric projects. FERC oversees the operation of the Coosa River/Lay Lake complex and conserves an easement along its banks up to elevation 406 along the ash pond South Dike. Locations just above this FERC easement were used to grade the stormwater management system and perimeter channels around the eastern/north side and around the southern/western side of the Ash Stack to the high point. This grading along with the closure by removal areas set the perimeter of the new ash fill and closure limits.

Stormwater Management System

The stormwater management system design for the ash pond closure was based on the final design conditions with the installed final cover system. This approach is most conservative since the highest stormwater runoff will occur in this condition relative to conditions during construction. The stormwater management system for the ash pond closure design consists of the following components:

- Final cover system
- Top deck collection and conveyance swales

- Side slope terraces
- Down slope channels/chutes
- Perimeter channels
- Stormwater culvert pipes
- Stormwater management ponds and outlet control structures

The stormwater components convey runoff flows to the proposed stormwater management ponds where they will discharge to the Coosa River/Lay Lake. The stormwater pond outlet pipes were designed to discharge just above the FERC easement around elevation 407.

APC has applied for a new NPDES permit that will allow dewatering of the ash pond. Until the new NPDES permit is obtained, the water level within the pond can be lowered 5 feet to elevation 426. Contractor mobilization occurred in February 2019 with initial site preparation. The Contractor is expected to construct temporary water ponds to accommodate stormwater and contact water from a 10-year 24-hour storm event or similar rainfall depth. The Contractor will construct these temporary ponds with a liner system at locations that coordinate with their phasing.

The existing auxiliary spillway, with a crest at elevation 439', will remain throughout the construction and post-closure periods. This existing spillway was designed by SCS/APC to accommodate the probable maximum precipitation (PMP), and is armored with articulated concrete block mats for scour protection.

The final condition stormwater management system was designed with the following criteria:

- Stormwater conveyances such as drainage channels, down slope channels, terraces, and culverts were designed to accommodate the 25-year, 24-hour storm event.
    - 0.5% minimum slope was used for surface water channels, culverts and stormwater pond outlet pipes.
    - Horizontal terraces were designed at 20-foot vertical intervals, with 20-foot width and 5% cross slopes and 3% longitudinal slopes along the flow line. Terraces convey runoff to the down slope channels.
    - Down slope channels are 8 feet wide, 2 feet deep with 4H:1V sideslopes. These channels extend from the top of slope of the ash fill to the perimeter channel at a 4H:1V slope. These channels include a pozzolanic infill in the

engineered turf (HydroBinder®) utilized for the higher flow velocities experienced with these conveyances.

  - The perimeter channel that discharges to the South Stormwater Pond was calculated for flow depths ranging from 1.2 to 2.5 feet with freeboard ranging from 1.8 to over 10 feet.
  - The perimeter channels that discharge to the West Stormwater Pond was calculated for flow depths ranging from 0.9 to 1.7 feet with freeboard ranging from 1.6 to 3.1 feet.

- Stormwater ponds were designed to manage the 2-, 10-, 25-, and 100-year storm events.
- A composite liner system is planned for the stormwater ponds consisting of 24-inches of a soil infiltration layer with a maximum permeability of $1x10^{-5}$ cm/sec covered with a 50-mil thick LLDPE structured geomembrane overlain with an engineered turf similar to the final cover system with ½-inch minimum sand infill.
- Outlet pipes are nominal 30-inch (inside diameter - 26.3 inches) high density polyethylene (HDPE) smooth-wall butt-fusion welded pipes installed through the existing dike by jack and boring, directional drilling, or conventional trench excavation.
- Four storm drain culverts on the south side of the Clear Pool are designed to accommodate stormwater run-on from offsite areas. These pipes are 24 and 30 inches in diameter and are dual-walled corrugated HDPE pipes with smooth interiors and watertight joints.
- Headwalls are Alabama Department of Transportation (ALDOT) standard details and include precast concrete standard headwalls and cast-in-place concrete slope headwalls.

e. Final Cover System

A geosynthetic engineered turf final cover system is proposed for the ash pond closure. This final cover system consists of a 50-mil thick structured linear low density polyethylene (LLDPE) geomembrane overlain with a synthetic engineered turf product with a ½-inch thick layer of sand infill ballast.

The cover system incorporates an integrated drainage layer between the geomembrane and engineered turf to remove water and prevent the buildup of hydraulic head within the final cover system. The 50-mil LLDPE structured geomembrane barrier for the system is Super Gripnet® and MicroDrain® produced by AGRU America. The Super Gripnet®

geomembrane contains spikes on the underside to increase interface friction with the underlying subgrade, while the MicroDrain® contains a textured surface on the underside to maintain interface friction for flatter areas. The top of the structured geomembrane for both materials contains raised studs that create the integrated drainage layer.

The engineered turf is composed of high density polyethylene (HDPE) grass blades tufted through two layers of polypropylene geotextile backing. The turf is designed for installation on top of the structured geomembrane and is stitched together at the seams. A half inch of sand infill is placed between the blades of the turf to provide additional weathering protection, ballast, and also to allow limited equipment traffic loads on the system. The sand infill will be specified to comply with the ASTM C33 standard for well-graded sand. The turf and sand provide aesthetics to the system while protecting the geomembrane from weathering. Additional armoring or surface treatment will be needed for areas of concentrated stormwater flows such as the down slope channels to prevent erosion of the sand infill.

Expected Final Cover System Performance

The final cover system includes the engineered turf, sand ballast and the integrated drainage layer between the geomembrane and engineered turf to remove water and prevent the buildup of hydraulic head within the final cover system. This system allows for potentially less leakage rates as the hydraulic heads are quickly dissipated. The 50-mil LLDPE Structured Geomembrane (20% thicker than the geomembrane allowed under Subtitle D regulatory requirements) offers better resistance from puncture.

According to Watershed Geo, "Based on several years of real world experience on over 40 million square feet installed, and extensive university and ASTM lab evaluations, the ClosureTurf® system has shown to have a leakage rate over 40 times less than subtitle D prescriptive cover and an erosion loss of over 100 times less than subtitle D prescriptive cover."

Erosion and maintenance of the final cover system is minimal compared with soil final cover systems. The engineered turf final cover system offers superior protection against wind and water erosion. Standard maintenance for the engineered turf component of the final cover system typically includes primarily visual observations during the site's periodic inspections. According to Watershed Geo at five-year intervals, it should

be expected that a small percentage (i.e. 2%) of sand infill may need to be re-graded into place.

f. Achievement of Closure Performance Standards

The ash pond closure is designed to achieve Closure Performance Standards When Leaving CCR in Place (ADEM Standards for the Disposal of Coal Combustions Residuals in Landfills and Surface Impoundments, Chapter 335-13-15-.07(3)(d) and § 257.102(d)). Free water will be removed, and interstitial water will be lowered to accomplish the CCR removal from the closure by removal areas and to close within a consolidated footprint.

With the installation of the final cover system on the consolidated footprint the control, minimization or elimination to the maximum extent feasible of post-closure infiltration of liquids into the waste and releases of CCR, leachate, contaminated run-off to the ground or surface waters or to the atmosphere will be accomplished. In addition, the design also includes a toe drain system to collect leachate and pump to the Wastewater Treatment Facility for treatment and instrumentation to monitor water levels and for slope movement into the post-closure period.

The grading will not allow the future impounding of water, sediment or slurry on the closure. The design utilizes appropriate final cover slopes, terraces and stormwater controls to meet the performance criteria. The stormwater management ponds include a composite liner system to improve drainage and minimize any infiltration.

The design of soil backfill in the closure by removal areas offers additional buttressing of slopes coupled with the control of water within the CCR and instrumentation to monitor water levels and for slope movement will improve slope stability to prevent sloughing or movement of slopes and the final cover system during construction and post closure.

The engineered turf final cover system allows for closure in the shortest amount of time while minimizing erosion and maintenance post closure. The final cover system also has a lower permeability than conventional soil cover systems thereby reducing infiltration to maintain a stable CCR fill.

An Assessment of Corrective Measures (ACM) for the Plant Gaston Ash Pond was placed in the Plant's Operating Record in June 2019 and submitted to the Department in July 2019. The development of the ACM

considered the planned closure approach which will include dewatering, consolidating the footprint of the ash, and constructing a cover system over the consolidated footprint that meets the requirements of r. 335-13-15-.07(3)(d). This closure approach will effectively control the source of CCR constituents to groundwater by removing free water and some interstitial water from the ash, reducing the footprint area of the ash and preventing further infiltration of surface water resulting from rainfall through the ash. Removal of the free liquid will reduce the volume of water available to flow from the Ash Pond during and after closure, while also minimizing the hydraulic head driving water through the subsurface.

Outside the consolidated footprint, ash will be excavated to remove all visible ash and a minimum of 6 inches of the underlying subgrade soils, thereby removing the source from these areas. The cover system that will be constructed over the consolidated footprint will have a permeability several magnitudes lower than the permeability of the natural clay subsoils beneath the impoundment, reducing the likelihood of future migration of water through the ash below the cover.

At the present time, a combination of the closure process and source control measures discussed above along with Monitored Natural Attenuation and adaptive site management are anticipated to provide the necessary remedy for this facility. However, in an adaptive site management process, system performance is monitored, and one or more of the technologies identified in the ACM will be used to supplement the remedy as needed if the selected approach is not performing as intended or corrective action goals are not met. If necessary, modifications to the closure plan may also be amended or supplemented to include other protective measures.

5. Maximum Inventory of CCR– § 257.102(b)(1)(iv) and r. 335-13-15-.07(3)(b)1.(iv)

The maximum inventory of CCR with the ash pond was calculated to be approximately 24,800,000 cubic yards. AutoCAD Civil 3D 2016 was used to calculate this quantity by generating 3D model surfaces from digital data from the ash pond closure design drawings using existing topography, bathymetry and historical design drawings.

6. Largest Area Requiring Final Cover – § 257.102(b)(1)(v) and r. 335-13-15-.07(3)(b)1.(v)

The existing ash pond encompasses approximately 270 acres. The proposed closure approach will consolidate the closure footprint by CCR removal from along the South Dike, East Area and from the West Area and grading the Ash Stack and East Area for closure with a geosynthetic final cover system. The proposed footprint of the consolidated CCR closure area represents the largest area requiring a final cover system and is approximately 193 acres. The final cover system will be extended to cover the stormwater management ponds, and slopes outside the proposed CCR footprint for anchoring into the existing berms along the North, South and southwest dikes. This additional final cover system equates to approximately 41acres outside the proposed CCR footprint for a total final cover system area of 229 acres.

7. Schedule for Completing Closure Activities § 257.102(b)(1)(vi) and r. 335-13-15-.07(3)(b)1.(vi)

The ash pond is anticipated to be closed in approximately 8 years. The following is a general description of activities and durations for closure. Many of these activities will be performed concurrently in different areas of the ash pond.

Activity	Duration
Clearing and Processing	60 months
Dewatering	80 months
CCR Excavation	80 months
CCR Placement	80 months
Process and Place Soil Backfill	90 months
Final Cover Installation	34 months
Site Stabilization	4 months

8. Certification of Closure

The Contractor shall retain the services of an approved independent Construction Quality Control (CQC) Team to perform specified inspection and testing throughout the construction. The Purchaser's Construction Quality Assurance (CQA) Team will verify conformance of the materials, testing and constructed work with the specifications.

In accordance with §257.102(h) and r. 335-13-15-.07(3)(h), within 30 days of completion of closure of the CCR unit, the owner or operator will prepare a notification of closure of the CCR unit. The notification will include the certification by a qualified professional engineer licensed in the State of Alabama verifying that closure has been completed in accordance

with the closure plan as required by 335-13-15-.07(3)(b) including the submittal of a Final Certification Report. The Final Certification Report will serve as the permanent record of the completed construction for the ash closure so as to assure regulatory agencies that the components were constructed in substantial accordance with the State permits, CQA Plan and any construction-level specifications and drawings. The owner or operator has completed the notification when it has been submitted to the Department and placed in the facility's operating record.

The Final Certification Report is anticipated to include the following:

1. *Certification Letter containing a certification from the CQA engineer working on the project, registered to practice in the State of Alabama, that the project was performed in accordance with the Closure Plan permit and any construction-level specifications and drawings*
2. *Pond Closure Technical Specifications*
3. *As applicable, associated permits and filings, such as Notice of Intent (NOI), local permits and any US Army Corp of Engineers (COE) correspondence and approvals*
4. *Soil, CCR, and any other material laboratory test results*
5. *Onsite and off-site borrow source test results that support acceptance of borrow soils.*
6. *Subgrade Proofroll Acceptance Forms with required signatures*
7. *Soil, CCR, concrete and any other material field test results*
8. *CCR Fill Density Test Summary and test locations*
9. *Soil Fill Density Test Summary and test locations*
10. *One Point Proctor and Drive Tube Density Summary*
11. *Sand infill thickness and test locations*
12. *HydroBinder thickness and test locations*
13. *Manufacturer's Quality Control Certifications*
    a. *Geosynthetic materials*
    b. *Engineered turf*
    c. *HydroBinder*
    d. *HDPE pipe*
    e. *Drainage Geocomposites*
    f. *Geotextile*
    g. *Welding rods*
14. *Close by Removal Certification*
15. *Geomembrane Installation Logs*
    a. *Geomembrane Panel Deployment Log*
    b. *Geomembrane Repair Log*
    c. *Geomembrane Seaming and Testing Log*
    d. *Geomembrane Trial Seam Log*
    e. *Geomembrane Destructive Samples Laboratory Results*
16. *Certification Subgrade Surveys*
17. *Daily CQC Field Monitoring Reports*
18. *Daily CQA Field Reports*

19. *Record As-Built Drawings*
    a. *Geomembrane As-Built Drawings*
    b. *Periodic Topographic Survey*
    c. *Top of Subgrade As-Built Drawings*
20. *Certifications for quality control*

9. Directional Informational Signs

During construction the Contractor will control access points for ash pond ingress and egress. He will provide signage, fencing and barriers to control traffic within the ash pond and working areas. Post-closure signage and barriers will be provided for limiting access to the ash pond and prohibiting individuals from driving on the closure turf.

10. Vegetative Plan

Temporary and permanent seeding will be provided in accordance with CBMP Plans in the Closure Plan drawings.

11. Site Equipment Needed

The Contractor selected to perform closure construction will be responsible for all equipment needed during the construction period. For post-closure care, Alabama Power will provide all necessary company owned, leased or contracted equipment needed to perform maintenance and any necessary repairs.

12. Sediment Removal

On a periodic basis during closure, accumulated sediment will be removed when necessary from drop inlets, drainage pipes, diversion ditches, and other drainage structures.

13. Erosion and Sediment Control

The construction of the ash pond closure will largely occur with the limits of the dikes and is not expected to require significant measures to control sediment and erosion. There are some supporting operations such as access improvements on the dikes, onsite soil borrow areas and stormwater pond outlet pipes and structures that will require additional CBMP measures to control surface runoff. Erosion and sediment control measures shall be in accordance with Alabama Handbook for Erosion Control, Sediment Control, and Stormwater Management on Construction Sites and Urban Areas, Alabama Soil and Water Conservation Committee (ASWCC) published at the time permit coverage is obtained.

The Contractor will install CBMPP measures prior to land disturbing activities and shall maintain all CBMPP measures in continuous effective operating order until such time as they are removed. The Contractor shall be responsible for repairing or replacing, as applicable, any CBMPP measures which have been rendered inoperable for any reason.

CBMPP measures shall remain in place and be properly maintained by Contractor until relevant areas of site are considered closed.

CBMP measures will be provided in accordance with CBMP Plans in the Closure Plan drawings.

14. Cost of Closure

Through coordination with the engineering design team and the subcontractor selected to execute the closure activities, the estimated cost of closing Plant Gaston's ash pond is approximately $360 million. The estimate is considered to be at control level with a high level of project definition. However, due to the complexity, quantities, and duration of the overall project, some variability in costs is expected. Additional expenses of post closure care, maintenance, and corrective action are currently estimated at $22 million. Fully detailed long-term maintenance and corrective action strategies have not yet been determined which have the potential to influence current estimates.

Some of the most significant cost items include:

- Water management including contact and noncontact water;
- ClosureTurf® cover system;
- Construction management and construction quality control (CQC);
- Offsite fill materials such as soil and clay fill, gravel and riprap;
- Excavation, placement, compaction, and grading of CCR into the consolidated footprint;
- Construction quality assurance (CQA);
- Dust control management;
- Engineering support; and
- General contingency and inflation on construction items.

15. Closure Schedule

The closure of Plant Gaston's Ash Pond is expected to exceed the closure activity timeline of five years (§ 257.102(f)(1)(ii) and r. 335-13-15-.07(3)(f)1.(ii)) and is expected to require the allowable two-year extensions to complete the closure due to the excavation moisture conditioning, placement, compaction, and grading of approximately 6,000,000 cubic yards of CCR and underlying soil. The ash pond closure schedule is included as **Table 1**.

16. Recordkeeping/Notification/Internet Requirements

As outlined in § 257.105 and r. 335-13-15-.08(1), each Owner or Operator of a CCR unit subject to the Department regulations must maintain files of certain information in an operating record at the facility. Each file is to be retained for at least five years following the date of each occurrence, measurement, maintenance, corrective action, report, record or study. Electronic storage of the records is acceptable. These records are to be made available to the Department upon request.

Certain notifications are to be made in accordance with the requirements of § 257.106 and r. 335-13-15-.08(2). In many instances, such notifications are to be placed in the facility's Operating Record. In certain instances, further notifications are to be made to the Department Directory within 30 days of placement of a notification into the Operating Records. Furthermore, a publicly accessible internet site must be established for posting of certain notifications and compliance information within 30 days of it being placed in the Operating Record.

Alabama Power and Plant Gaston maintain an electronic Operating Record for the facility. In addition, a publicly accessible internet site has already been established for compliance with EPA's CCR Rule. Required notifications and compliance data, as outlined in § 257.105 through § 257.107 and r. 335-13-15-.08 and as applicable to the Plant Gaston Ash Pond, will be maintained in the electronic Operating Record, and as required, made available on the publicly accessible internet site within 30 days of placement in the Operating Record. Furthermore, required notifications will be made to the Department Director within 30 days of placement in the Operating Record.

Certain plans and assessments are required to be updated at specified intervals and/or upon modification of certain components of the facility. If and when applicable, updates will be made to the respective plans and assessments, and notifications placed in the Operating Record, posted to the publicly accessible internet site, and communicated in writing to the Department Director in accordance with the Department rules.

17. Written Post-Closure Plan

40 CFR § 257.104 and ADEM Administrative Code r. 335-13-15-.07(5) requires the owner or operator of an existing CCR surface impoundment that is closed in place to provide for post-closure care of the unit for a period of at least 30 years. Post-closure care includes maintenance of the facility, as well as groundwater monitoring in accordance with § 257.90 through § 257.98 and r. 335-13-15-.06(1) through r. 335-13-15-.06(9).

The Plant Gaston Ash Pond is currently expected to be closed in place under the performance standards outlined in § 257.102(d) and r. 335-13-15-.07(3)(d). Following

closure, maintenance will be provided on the final cover system for the required post-closure care period so that the integrity and effectiveness of the final cover system will be maintained. Maintenance activities will include, as needed, repairs to the final cover to correct any effects related to settlement, subsidence, erosion or other events, and will be performed to prevent run-on or run-off from eroding or otherwise damaging the final cover. Maintenance tasks could include, but not be limited to, repair of subsidence or erosion features, replacement of sand in-fill within the synthetic turf and re-establishment of vegetation, where applicable. Maintenance will be performed on a semi-annual schedule, or more frequently if needed.
The groundwater monitoring system will be maintained throughout the required post-closure care period. Groundwater monitoring will be performed on a semiannual basis during the required post-closure care period as well.

The following office(s) can be contacted about the facility during the post-closure care period.

Gaston Steam Plant
Environmental Manager
31972 Highway 25, Wilsonville, AL 35186
1-205-669-8075
G2CCRPostGAS@southernco.com

At the present time, there is no planned use of the facility after closure. If current plans change, they will be noted in an amendment to this post-closure care plan. Any future use of the property after closure will not disturb the integrity of the final cover, liner or any other component of the containment system. Furthermore, the functionality of the groundwater monitoring system will be maintained.

No later than 60 days following completion of the post-closure care period of 30 years, Alabama Power Company will prepare a notification verifying completion of the post-closure care.

Table 1: Gaston Ash Pond Closure Milestones Schedule (335-13-15-.07(3)(b)1.(vi))

Closure Activity	Completion Date
Notice of Intent to Close	October 2016
Cease Receipt of Waste Streams/Initiate Construction Activities	April 2019
Initiate Free Water Dewatering Activities	September 2019
Begin CCR Consolidation and Stabilization	October 2019
Begin Final Cover Cap Construction Activities	October 2021
End Final Cap Construction Activities	March 2027
Project Completion	July 2027

PLANT E.C. GASTON

ASH POND CLOSURE DESIGN

100% DESIGN DRAWINGS

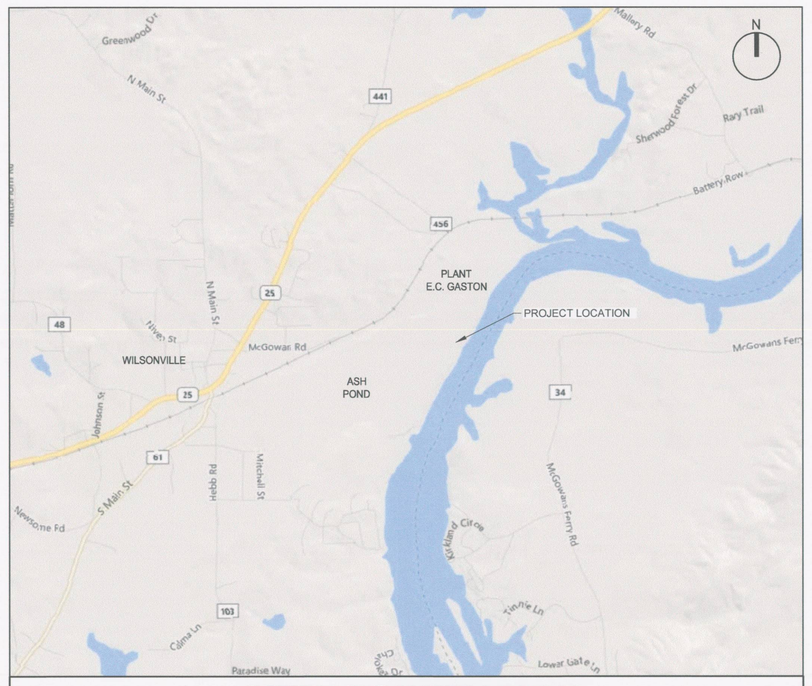
31972 HIGHWAY 25

WILSONVILLE, ALABAMA

SHELBY COUNTY

APPROXIMATE ASH POND AREA: 269 ACRES
MAIN ENTRANCE: LATITUDE: 33°15'03.99"N, LONGITUDE -86°28'17.40"W

DATE: 05/15/2019

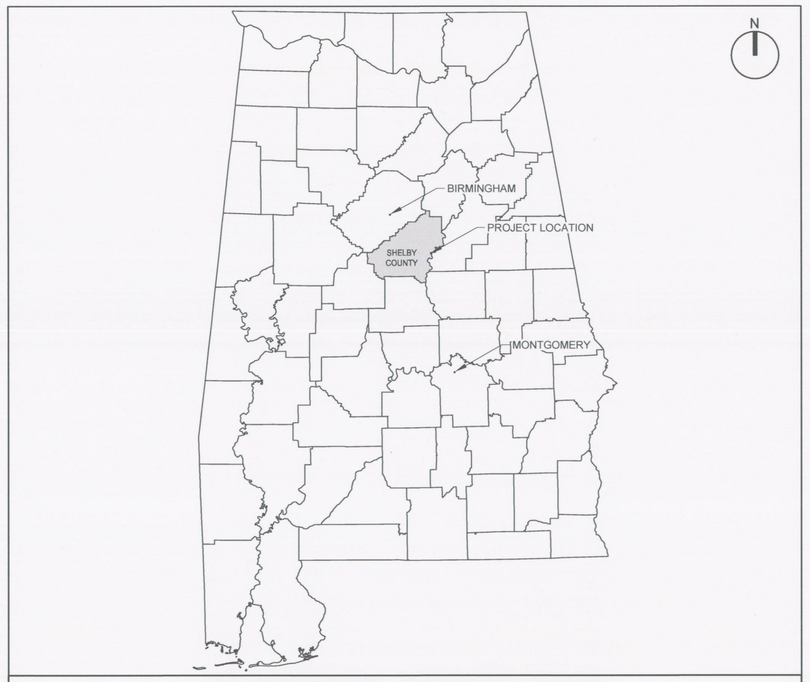


SITE VICINITY MAP

2000 0 2000 4000 FT

SITE LOCATION MAP

1000 0 1000 2000 FT



ALABAMA STATE MAP

SOURCES:

Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community, USGS Digital Map Information

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED No. 25537 PROFESSIONAL ENGINEER GILBERT M. HAINES
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

COVER SHEET

SHEET NUMBER:	REV. #
GAS_3.2.4_100	0

GENERAL NOTES

1. THROUGHOUT THE DRAWINGS, SPECIFICATIONS, AND SUPPORTING ENGINEERING DOCUMENTS, THE PURCHASER IS REFERRED TO AS THE OWNER.
2. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING, UNDERSTANDING, AND ENFORCING SITE SPECIFIC ENVIRONMENTAL, HEALTH, AND SAFETY POLICIES OF THE OWNER.
3. THE CONTRACTOR SHOULD PLAN AND IMPLEMENT WORK ACTIVITIES RECOGNIZING THE ENVIRONMENTAL SENSITIVITY OF THE WORK AREA AND PROXIMITY TO THE COOSA RIVER AND SURROUNDING RESIDENTIAL PROPERTIES.
4. THE CONTRACTOR SHOULD RECOGNIZE THE IMPORTANCE OF MAINTAINING A CLEAN WORK AREA, PROPER INSTALLATION AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL MEASURES, AS WELL AS, PROTECTION OF STORMWATER AND THE COOSA RIVER.
5. PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL FIELD VERIFY THE SITE CONDITIONS AND FACILITY LAYOUT. IF DISCREPANCIES EXIST BETWEEN THE DRAWINGS AND SITE CONDITIONS/FACILITY LAYOUT, THE CONTRACTOR SHALL PROMPTLY NOTIFY THE OWNER SO THAT CONFLICTS OR DIFFERING SITE CONDITIONS CAN BE RESOLVED.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING APPROPRIATE UTILITY COMPANIES AND LOCATING UTILITIES PRIOR TO STARTING WORK ACTIVITIES. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING LOCATION AND DEPTHS OF EXISTING UTILITIES AND IDENTIFICATION OF ENERGIZED CONDUITS, WIRES AND STRUCTURES PRIOR TO CONSTRUCTION.
7. ASH POND LIMITS, DIKE DIMENSIONS AND LOCATIONS ARE APPROXIMATE AND BASED ON HISTORICAL DRAWINGS SEGCO NO.1 STEAM PLANT, ASH SETTLING POND - PLAN & SECTIONS, D-116482 SHEETS 1 THROUGH 4, ALABAMA POWER COMPANY 5/13/1959.
8. CONTRACTOR SHALL NOTIFY AND COORDINATE WITH SCS CONSTRUCTION SITE MANAGER PRIOR TO ANY WORK PLANNED FOR CONSTRUCTION EQUIPMENT UNDER HIGH VOLTAGE POWER LINES. THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING AND ENSURING COMPLIANCE WITH THE MINIMUM REQUIREMENTS ESTABLISHED BY THE SCS PROCEDURE "SH-2E-07 WORKING ON OR NEAR ELECTRICAL SERVICES AND/OR EQUIPMENT" AS A PART OF THE CONTRACTOR'S SITE-SPECIFIC SAFETY PLANS.
9. EXISTING GROUNDWATER MONITORING WELLS ARE DEPICTED ON THESE DRAWINGS. CERTAIN MONITORING WELLS ARE DESIGNATED AS COMPLIANCE MONITORING WELLS FOR REGULATORY PURPOSES AND SHOULD BE PROTECTED BY THE CONTRACTOR. OTHER MONITORING WELLS ARE INSTALLED WITHIN THE ASH POND AND REQUIRE FUNCTIONALITY TO CONTINUE TO THE EXTENT PRACTICABLE UNTIL SUCH TIME THE SURROUNDING CCR IS SCHEDULED FOR REMOVAL OR FILLING. THE CONTRACTOR SHALL PROTECT ALL OF THE DESIGNATED MONITORING WELLS (SEE SHEET GAS_3.2.4_107 FOR WELL LOCATIONS AND GAS_3.2.4_108 FOR WELLS TO BE ABANDONED BY SCS).
10. THE TREELINE DEPICTED ON THE EXISTING CONDITIONS DRAWING (SHEET GAS_3.2.4_103) SHOWS EXISTING VEGETATION AT THE TIME THE REFERENCED TOPOGRAPHIC SURVEY WAS PERFORMED.

SURVEY REQUIREMENTS

1. SURVEY GROUND CONTROL PROVIDED BY SOUTHERN COMPANY ENGINEERING & CONSTRUCTION SERVICES IN NAD83 ALABAMA WEST - NAVD 88 US SURVEY FEET.
2. CONTRACTOR SURVEYING AND MAPPING PERFORMED DURING CONSTRUCTION SHALL BE TIED TO THE SURVEY CONTROL POINTS AS SHOWN ON THE DRAWINGS.

DEMOLITION

1. WORK SHALL BE PERFORMED IN A MANNER THAT DOES NOT DISTURB EXISTING PAVEMENT, WELLS, UTILITIES, STRUCTURES, OR OTHER SITE FACILITIES NOT DESIGNATED FOR DEMOLITION OR REMOVAL.
2. CONTRACTOR IS RESPONSIBLE FOR PROVIDING PROPER BARRICADES AND PROTECTING EXISTING PAVEMENT, WELLS, UTILITIES, STRUCTURES AND OTHER SITE FACILITIES NOT PLANNED FOR DEMOLITION OR REMOVAL.
3. CONTRACTOR SHALL REPAIR OR REPLACEMENT ANY DAMAGE TO EXISTING PAVEMENT, WELLS, UTILITIES, STRUCTURES, OR OTHER SITE FACILITIES AT NO COST TO THE PURCHASER/OWNER.

GRADING & EXCAVATION

1. CONTRACTOR IS RESPONSIBLE FOR FOR IMPLEMENTING AND ENSURING COMPLIANCE WITH THE MINIMUM REQUIREMENTS ESTABLISHED BY THE CURRENT VERSION OF THE SCS EH&S POLICY AND PROCEDURE MANUAL. THE E&CS PROJECT EH&S POLICY AND PROCEDURES, STANDARDS, AND GUIDELINES LIBRARY IN PLAYBOOK 2.0.
2. CONTRACTOR SHALL COMPLY WITH THE MINIMUM REQUIREMENTS OF SCS'S PROCEDURE "SH-S-6 ASH BASINS" AS A PART OF THE CONTRACTOR'S SITE-SPECIFIC SAFETY PLANS FOR WORK WITHIN THE ASH POND.
3. CONTRACTOR SHALL PREPARE AN EXCAVATION WORK PLAN FOR OWNER AND ENGINEER'S REVIEW AND APPROVAL PRIOR TO BEGINNING WORK. THE PLAN SHALL ADDRESS ACCESS INTO/OUT OF THE ASH POND; DEFINE HAUL ROUTES; IDENTIFY DEWATERING METHODS; SUMMARIZE THE PROPOSED ASH REMOVAL SEQUENCE; IDENTIFY THE EXCAVATION WORKING FACE SIZE; SUMMARIZE ASH EXCAVATION/HAULING METHODS; AND ESTABLISH METHODS FOR OBSERVING/MONITORING AND DOCUMENTING COMPLIANCE WITH THE WORK PLAN.
4. CONTRACTOR TO PERFORM GRADING OF THE ASH STACK SLOPES PRIOR TO ANY EXCAVATION AT THE TOE OF THE ASH STACK TO INCREASE STABILITY BY REDUCING SLOPES TO 4:1 WITH BENCHES AS INDICATED ON THE EXCAVATION DRAWINGS.
5. CONTRACTOR SHALL MONITOR GROUND CONDITIONS FOR STABLE ACCESS AND SAFE EXCAVATION AND GRADING AND MAINTAIN WORK AND EMERGENCY ACTION PLANS FOR PERSONNEL AND EQUIPMENT RESCUE.
6. TEMPORARY ACCESS ROADS WITHIN THE ASH POND SHALL BE DESIGNED BY A PE LICENSED TO PRACTICE IN ALABAMA FOR SPECIFIC ASH BASIN CONDITIONS. CONTRACTOR SHALL PROVIDE THE PE-APPROVED ACCESS ROAD DESIGNS AND IS RESPONSIBLE FOR THEIR CONSTRUCTION AND MAINTENANCE.
7. PROPOSED ASH POND EXCAVATION GRADES WERE ESTIMATED FROM SUBSURFACE EXPLORATION AND HISTORICAL DOCUMENTATION. ACTUAL ASH POND EXCAVATION GRADES MAY VARY BASED ON FIELD CONDITIONS.
8. THE CCR REMOVAL PLAN DRAWINGS PROPOSED GRADES DO NOT SHOW THE ADDITIONAL EXCAVATION OF 6-INCHES OF SOIL BELOW THE ESTIMATED ASH/SOIL INTERFACE. THE CONTRACTOR IS RESPONSIBLE FOR EXCAVATING 6-INCHES OF SOIL BELOW THE ACTUAL ASH/SOIL INTERFACE IDENTIFIED DURING ASH REMOVAL.
9. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING AND MANAGING ORGANIC MATERIAL IN ACCORDANCE WITH THE ORGANICS MANAGEMENT NOTES. ONLY A DE MINIMIS QUANTITY OF ORGANIC MATERIAL WILL BE ALLOWED IN ASH FOR OFF-SITE SHIPMENT. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING THE ALLOWABLE DE MINIMIS ORGANIC CONTENT IN ASH WITH THE OWNER.
10. THE OWNER AND/OR CONTRACTOR MAY USE INSTRUMENTATION (E.G. PIEZOMETERS) TO MONITOR ASH POND WATER LEVELS AND SEEPAGE WITHIN ASH EXCAVATION AREAS TO PROMOTE EXCAVATION SAFETY.
11. THE CONTRACTOR SHALL IMPLEMENT A CONSTRUCTION MONITORING PLAN CONSISTING OF INSTALLING GROUNDWATER MONITORING EQUIPMENT (TO MEASURE WATER LEVELS AND OTHER GROUNDWATER PARAMETERS) DURING ASH REMOVAL.
12. THE CONTRACTOR IS RESPONSIBLE FOR ACHIEVING, MAINTAINING, AND VERIFYING THE TARGET ASH MOISTURE CONTENT PRIOR TO LOADING IN TRUCKS AND PLACEMENT. THE PROPOSED TARGET ASH MOISTURE CONTENT IS 30 PERCENT BY WEIGHT UNLESS OTHERWISE AGREED TO BY THE OWNER AND CONTRACTOR.
13. APPROPRIATE BARRICADES AND SIGNAGE SHALL BE DISPLAYED AS NEEDED TO INDICATE ROUTES OF TRAVEL.
14. THE CONTRACTOR SHALL REFER TO SECTION 31.20.00 EARTH MOVING FOR DETAILED INFORMATION ON GRADING AND EXCAVATION ACTIVITIES.
15. CCR AND SOIL TO BE COMPACTED IN 6" LIFTS TO A MINIMUM OF 95% MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698.
16. TYPICAL ASH STACK SIDE SLOPES ARE 4:1 OR FLATTER WITH TERRACING AT 20 FEET VERTICAL INTERVALS.
17. THE TOP DECK OF THE ASH STACK CLOSURE SHALL BE CONSTRUCTED AS DESIGNED, AND NOT BE LESS THAN 3% MINIMUM OR GREATER THAN 10% MAXIMUM.

ASH REMOVAL VERIFICATION

1. THE VERIFICATION OF ASH REMOVAL WILL FOLLOW THE VISUAL ASH REMOVAL VERIFICATION PROCEDURE OUTLINED IN THE CQA PLAN SUMMARIZED AS FOLLOWS:

A. THE CQA ENGINEER WILL PREPARE AN ASH POND MAP USING A 100-FT GRID SPACING. GRID POINTS WILL BE ASSIGNED A UNIQUE ALPHANUMERIC LABEL FOR REFERENCE AND DOCUMENTATION OF ASH REMOVAL.

B. THE CONTRACTOR WILL EXCAVATE UNTIL THERE IS NO VISIBLE ASH PRESENT. THIS SURFACE SHALL BE REFERRED TO AS THE ASH/SOIL INTERFACE.

C. CQA PERSONNEL WILL OBSERVE THE ASH/SOIL INTERFACE AT THE WORKING FACE TO CONFIRM VISIBLE ASH HAS BEEN REMOVED. OBSERVATIONS SHALL BE MADE WITH REFERENCE TO THE ASH POND GRID MAP. OBSERVATIONS WILL INCLUDE, BUT NOT BE LIMITED TO, TAKING PHOTOGRAPHS, CLASSIFYING SOILS BY THE VISUAL-MANUAL CLASSIFICATION METHOD (ASTM D2488), AND DESCRIBING SOIL COLOR. CQA PERSONNEL WILL DOCUMENT OBSERVATIONS IN FIELD LOGS OR REPORTS.

D. THE ASH/SOIL INTERFACE SURFACE SHALL BE SURVEYED.

E. THE CONTRACTOR SHALL EXCAVATE 6-INCHES BELOW THE ASH/SOIL INTERFACE. THIS SURFACE SHALL BE REFERRED TO AS THE BOTTOM OF EXCAVATION. EXCAVATED SOIL SHALL BE FILLED WITHIN THE ASH POND IN AREAS DESIGNATED FOR ASH FILL.

F. THE BOTTOM OF EXCAVATION SURFACE SHALL BE SURVEYED.

SINKHOLE MITIGATION NOTES:

1. IF A SINKHOLE IS ENCOUNTERED DURING ASH EXCAVATION, THE CONTRACTOR SHALL IMPLEMENT AND FOLLOW THE MITIGATION TECHNIQUES AS APPROVED BY THE OWNER AND ENGINEER.
2. FOR INFORMATION, THE GENERAL SINKHOLE MITIGATION TECHNIQUES ARE AS FOLLOWS:

A. ASSESS SINKHOLE SIZE, LOCATION AND DEPTH (IF SAFE TO DO SO).

B. SURVEY SINKHOLE EXTENTS.

C. DIVERT SURFACE WATER AWAY FROM SINKHOLE THROUGH STORMWATER BEST MANAGEMENT PRACTICES.

D. EXCAVATE DEBRIS, ASH, LOOSE SOIL OR BROKEN ROCK FROM SINKHOLE TO AN ADEQUATE DEPTH AS SAFE AS IS PRACTICABLE OR TO A MAXIMUM OF 10 FEET BELOW THE PROPOSED CCR REMOVAL GRADES.

E. BACKFILL (PLUG) THE SINKHOLE WITH ENGINEERED FILL PER SPECIFICATIONS. LARGER SINKHOLES MAY REQUIRE A GRADED AGGREGATE FILTER PRIOR TO PLUGGING WITH ENGINEERED FILL.

F. REGRADE THE AREA TO PROMOTE POSITIVE DRAINAGE AWAY FROM THE SINKHOLE.

G. MONITOR SINKHOLE AREA FOR SUBSIDENCE.

EARTHWORK

1. THE CONTRACTOR SHALL REFER TO SECTION 31.20.00 EARTH MOVING FOR DETAILED INFORMATION ON GRADING AND EXCAVATION ACTIVITIES.
2. ACCEPTABLE CLASSIFICATIONS FOR SOIL MATERIALS USED FOR COMPACTED FILL ARE SAND (SW, SP, SM,SC), SILT (ML OR MH), OR CLAY (CL OR CH) UNDER THE UNIFIED SOIL CLASSIFICATION SYSTEM. UNACCEPTABLE CLASSIFICATIONS ARE PEAT (PT) OR ORGANIC SILT OR CLAY (OL OR OH). COMPACTED FILL SHALL BE DEFINED AS SOIL MATERIALS EITHER FROM THE EXISTING ASH POND DIKES, THE EXISTING BORROW AREA, OTHER ONSITE LOCATIONS, OR OFFSITE BORROW SOURCES.
3. COMPACTED FILL SHALL BE PLACED AND COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY AND WITHIN A MOISTURE CONTENT RANGE OF -3 PERCENT TO +3 PERCENT OF THE RESPECTIVE OPTIMUM MOISTURE CONTENT AS DETERMINED BY THE STANDARD PROCTOR METHOD (ASTM D698). THE MAXIMUM COMPACTED LIFT THICKNESS IS 8 INCHES.
4. COMPACTED FILL WILL BE USED FOR BACKFILL MATERIAL AS PART OF THE RESTORATION GRADING PLAN AND AS STORMWATER DIVERSION MEASURES AND SHALL BE FREE OF ORGANIC DEBRIS, TRASH, ASH OR OTHER DELETERIOUS MATERIALS UNLESS OTHERWISE APPROVED BY THE OWNER.

SURFACE AND CONTACT WATER MANAGEMENT

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEWATERING, COLLECTING AND PUMPING INTERSTITIAL WATER AND CONTACT STORMWATER WITHIN THE ASH POND TO THE WASTEWATER TREATMENT SYSTEM (WWTS) PROVIDED BY THE OWNER BY OTHERS UNDER SEPARATE CONTRACT TO THE OWNER AND DISCHARGED IN ACCORDANCE WITH THE APPROVED NPDES PERMIT. THE WWTS HAS A NOMINAL TREATMENT CAPACITY OF 2000 GALLONS PER MINUTE AND WILL BE OPERATED FOR THE PURPOSE OF TREATING CONTACT WATER DURING CONSTRUCTION.
2. THE CONTRACTOR MUST MAINTAIN RUN-ON STORMWATER AND RUN-OFF ASH CONTACT WATER CONTROL DURING ASH REMOVAL WITH BEST MANAGEMENT PRACTICES INCLUDING AND NOT LIMITED TO CHANNELS, DIVERSION BERMS, AND PUMPING.
3. DRAINAGE DESIGN IS ACCOMPLISHED USING DIVERSION BERMS, TERRACES, DOWNSLOPE CHANNELS, PERIMETER CHANNELS, STORMWATER PONDS, OUTLET PIPES AND STRUCTURES AND ENERGY DISSIPATERS.
4. DIVERSION BERMS CONTROL STORMWATER RUNOFF FROM THE TOP OF ASH STACK (TOP DECK) AND CONVEY TO THE DOWNSLOPE CHANNEL. TERRACES CONTROL STORMWATER RUNOFF ON THE SIDE SLOPES AND CONVEY STORMWATER AT 1% SLOPE TO THE DOWNSLOPE CHANNELS. DOWNSLOPE CHANNELS CONVEY STORMWATER TO THE TOE OF SLOPE AND INTO THE PERIMETER DRAINAGE CHANNEL WHICH IS SLOPED AT 0.5% FLOWING TO THE STORMWATER PONDS.
5. THE DOWNSLOPE CHANNELS ARE ARMORED WITH A CEMENT MATERIAL TO RESIST STORMWATER VELOCITIES TO THE PERIMETER DRAINAGE CHANNELS. ADDITIONAL ENERGY DISSIPATION MAY UTILIZE RIPRAP STONE MATERIAL IN AREAS OF CONCENTRATED FLOWS AND PIPE OUTLETS.
6. STORMWATER RUN-ON TO THE ASH POND SHALL BE COLLECTED BY DRAINAGE CHANNELS OR DIVERSION BERMS AND CONVEYED ACCORDING TO THE DESIGN. STORMWATER FROM THE ADJACENT BORROW AREA SHALL BE COLLECTED AND CONTROLLED IN ACCORDANCE WITH THE DESIGN BY SCS AND NPDES PERMIT NO. ALR10B832.
7. STORMWATER CONVEYANCES DESIGNED TO ACCOMMODATE THE 25-YEAR 24-HOUR STORM EVENT.
8. STORMWATER PONDS DESIGNED TO ACCOMMODATE THE 25-YEAR 24-HOUR AND THE 100-YEAR 24-HOUR STORM EVENTS.
9. CONTRACTOR SHALL PREPARE AND SUBMIT AN EXCAVATION PLAN TO THE OWNER AND ENGINEER FOR APPROVAL PRIOR TO STARTING ASH REMOVAL.
10. THE CONTRACTOR SHALL VERIFY WATER STORAGE CAPACITY WITHIN THE ASH POND, PLAN FOR ADDITIONAL STORAGE TO ACCOMMODATE CCR DEWATERING AND RAINFALL ADD WATER CONVEYANCE SYSTEMS TO MOVE WATER TO TEMPORARY LINED PONDS AND THE ONSITE WWTS AND PHASING FOR DIVERTING RUNOFF FROM COMPLETED AREAS AND RUN-ON FROM OFFSITE.
11. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING PUMPING TO THE ON-SITE WASTEWATER TREATMENT SYSTEM WITH THE SYSTEM OPERATOR.
12. THE FOLLOWING CRITERIA AND CALCULATIONS FROM THE DEWATERING PLAN DOCUMENT PRESENTED BELOW FOR CONTRACTOR GUIDANCE IN PREPARING THE STORMWATER AND CONTACT WATER MANAGEMENT PLAN.

A. THE WWTS HAS A NOMINAL TREATMENT CAPACITY OF 2000 GPM.

B. RAINFALL RUNOFF VOLUMES PER ACRE FOR VARIOUS GROUND COVERS (CURVE NUMBER CN) PER STORM EVENT ARE INDICATED BELOW.

Surface Runoff Calculations: Runoff Calculations Per Acre for CN per Storm Event										
CN = 95 (Closure turf, impervious and ponding areas)					**CN = 92** (Industrial developed areas, mixed use impervious and pervious areas)					
Storm Event	Run-off (cfs)	Vol (cft)	Vol (ac-ft)	Vol (gal)	Storm Event	Run-off (cfs)	Vol (cft)	Vol (ac-ft)	Vol (gal)	
1	3.224	10,336	0.24	77,310	1	3.004	9,299	0.21	69,560	
2	3.724	12,046	0.28	90,100	2	3.512	10,971	0.25	82,060	
5	4.619	15,141	0.35	113,250	5	4.424	14,016	0.32	104,840	
10	5.441	18,011	0.41	134,720	10	5.261	16,851	0.39	126,050	
25	6.674	22,341	0.51	167,110	25	6.512	21,143	0.49	158,150	
50	7.711	26,001	0.6	194,490	50	7.563	24,779	0.57	185,350	
CN = 80 (Clean closure area, borrow area, open space with vegetation)					**CN = 69** (Pre-developed conditions, Open spaces w/vegetation in fair condition)					
Storm Event	Run-off (cfs)	Vol (cft)	Vol (ac-ft)	Vol (gal)	Storm Event	Run-off (cfs)	Vol (cft)	Vol (ac-ft)	Vol (gal)	
1	1.948	5,840	0.13	43,680	1	1.06	3,452	0.08	25,820	
2	2.428	7,259	0.17	54,300	2	1.448	4,556	0.1	34,080	
5	3.32	9,934	0.23	74,310	5	2.208	6,735	0.15	50,380	
10	4.161	12,500	0.29	93,500	10	2.959	8,913	0.2	66,670	
25	5.44	16,479	0.38	123,260	25	4.148	12,407	0.28	92,800	
50	6.523	19,909	0.46	148,920	50	5.185	15,499	0.36	115,930	

AC-FT = ACRE FEET, CFS = CUBIC FEET PER SECOND, CFT = CUBIC FEET, GAL = GALLONS, VOL = VOLUME

C. DEWATERING VOLUMES BELOW ARE BASED ON THE POTENTIOMETRIC SURFACE DATED 04/16/18. DEWATERING VOLUMES DO NOT ACCOUNT FOR RECHARGE FROM RAINFALL EVENTS DURING DEWATERING ACTIVITIES AND IS PROVIDED AS AN ESTIMATE OF THE VOLUME OF INTERSTITIAL WATER ANTICIPATED TO BE WITHIN THE SATURATED CCR MATERIAL.

Table 3: Estimated Interstitial Water Volume to be Removed					
	Cut* (CY)	Drainage Porosity	Water Volume (CY)	Water Volume (ac-ft)	Water Volume (gal)
Total Excavation	1,968,750	0.18	354,380	220	71,570,600
Segregated Ash Cut Volume Summary					
	Cut (CY)	Drainage Porosity	Water Volume (CY)	Water Volume (ac-ft)	Water Volume (gal)
West Area	946,690	0.18	170,400	106	34,414,000
South Area	605,680	0.18	109,020	68	22,017,700
East Area	416,380	0.18	74,950	46	15,136,900

AC-FT = ACRE FEET, CY = CUBIC YARDS, GAL = GALLONS

EROSION AND SEDIMENT CONTROL CONSTRUCTION BEST MANAGEMENT PRACTICES PLAN (CBMPP)

1. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN ACCORDANCE WITH ALABAMA HANDBOOK FOR EROSION CONTROL, SEDIMENT CONTROL, AND STORMWATER MANAGEMENT ON CONSTRUCTION SITES AND URBAN AREAS, ALABAMA SOIL AND WATER CONSERVATION COMMITTEE (ASWCC) PUBLISHED AT THE TIME PERMIT COVERAGE IS OBTAINED.
2. THE CONTRACTOR MUST BE AWARE OF AND ABIDE BY OTHER CBMP PLANS PREPARED FOR COMPANION PROJECTS SUPPORTING ASH POND CLOSURE.
3. THE CONTRACTOR WILL ASSUME THE RESPONSIBILITIES FOR OPERATING AND MAINTAINING CBMPP MEASURES AND REQUIREMENTS/CONDITIONS OF THE CBMPP PERMIT FOR THE BORROW/STOCKPILE AREA THROUGH THE DURATION OF ASH POND CLOSURE.
4. CONTRACTOR MUST INSTALL CBMPP MEASURES PRIOR TO LAND DISTURBING ACTIVITIES.
5. CONTRACTOR SHALL MAINTAIN ALL CBMPP MEASURES IN CONTINUOUS EFFECTIVE OPERATING ORDER UNTIL SUCH TIME AS THEY ARE REMOVED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING, AS APPLICABLE, ANY CBMPP MEASURES WHICH HAVE BEEN RENDERED INOPERABLE FOR ANY REASON.
6. CBMPP MEASURES SHALL REMAIN IN PLACE AND BE PROPERLY MAINTAINED BY CONTRACTOR UNTIL RELEVANT AREAS OF SITE ARE CONSIDERED CLOSED.

FUGITIVE DUST CONTROL PLAN

1. THE CONTRACTOR WILL UTILIZE APPROPRIATE MEASURES TO CONTROL FUGITIVE DUST. THE MEASURES MAY BE ADJUSTED TO COMPENSATE FOR CHANGING WEATHER. AT A MINIMUM THE CONTRACTOR WILL CONTROL FUGITIVE DUST USING WATER SUPPRESSION AND POLYMER TACKIFIERS.
2. THE CONTRACTOR SHALL MOISTURE CONDITION ASH, SOIL, AND OTHER MATERIALS DURING EXCAVATION, LOADING, HAULING, ON-SITE TRANSPORT, AND STOCKPILING TO REDUCE THE POTENTIAL FOR FUGITIVE DUST.
3. THE CONTRACTOR WILL UTILIZE APPROPRIATE MEASURES TO CONTROL FUGITIVE DUST ON FACILITY ROADS USED TO TRANSPORT ASH AND WITHIN OTHER ASH MANAGEMENT AREAS.
4. THE CONTRACTOR SHALL UTILIZE APPROPRIATE SPEED LIMITS TO REDUCE FUGITIVE DUST POTENTIAL.
5. TRUCKS USED TO TRANSPORT ASH WILL BE FILLED TO OR UNDER CAPACITY TO REDUCE THE POTENTIAL FOR SPILLING MATERIALS AND TO REDUCE FUGITIVE DUST.
6. THE OWNER AND THE CONTRACTOR WILL ASSESS THE EFFECTIVENESS OF FUGITIVE DUST CONTROL MEASURES BY PERFORMING VISUAL OBSERVATIONS OF THE ASH PONDS AND SURROUNDING AREAS AND IMPLEMENTING APPROPRIATE CORRECTIVE ACTIONS, AS NECESSARY. THE CONTRACTOR SHALL MAINTAIN LOGS TO RECORD DAILY OBSERVATIONS AND APPLICATION/UTILIZATION OF FUGITIVE DUST CONTROL MEASURES.
7. IF FUGITIVE DUST COMPLAINTS ARE RECEIVED FROM CITIZENS, THE OWNER WILL DOCUMENT AND INVESTIGATE THE COMPLAINT WITH THE CONTRACTOR'S COOPERATION. THE CONTRACTOR WILL IMPLEMENT CORRECTIVE ACTION AS NEEDED.
8. THE CONTRACTOR MAY OBTAIN WATER FROM THE FOLLOWING SOURCES IN ORDER OF PRIORITY: CONTACT WATER FROM THE CLEAR POOL OR CONTACT WATER PONDS, NON-POTABLE WATER FROM THE COOSA RIVER UP TO 300,000 GALLONS PER DAY OR AS MODIFIED BY THE OWNER.

ORGANICS MANAGEMENT

1. WOODY VEGETATION MUST BE REMOVED PRIOR TO ASH REMOVAL. THE CONTRACTOR MUST MANAGE CLEAN VEGETATION AND WOOD WASTE (WITH A DE MINIMIS AMOUNT OF ASH PRESENT) BY COMPOSTING (SHORT TERM TO REDUCE MASS) PRIOR TO OFF-SITE DISPOSAL, CHIPPING FOR USE ON SITE AS A BEST MANAGEMENT PRACTICE (BMP) MEASURE, BURNING THROUGH APPROVED METHODS, OR DISPOSING OF AT AN OFF-SITE LANDFILL.
2. WOODY VEGETATION WASTE FROM WITHIN THE ASH POND LIMITS MAY BE MECHANICALLY SCREENED TO REMOVE ASH, COMPOSTED (SHORT TERM TO REDUCE MASS) PRIOR TO OFF-SITE DISPOSAL, BURNED THROUGH APPROVED METHODS, OR DISPOSED OF AT AN OFF-SITE LANDFILL.
3. THE CONTRACTOR MUST USE AN AIR CURTAIN DESTRUCTOR (ACD) FOR ALL BURNING. AN ACD PERMIT WILL BE OBTAINED THROUGH THE LOCAL ISSUING AUTHORITY WITH ALABAMA FORESTRY COMMISSION APPROVAL.
4. BURNING WITH AN AIR CURTAIN DESTRUCTOR IS ALLOWED FOR PLANT GASTON DURING THE PERIOD WHICH IS NOVEMBER 1 THROUGH APRIL 30 OUTSIDE OF BURNING RESTRICTIONS FOR SHELBY COUNTY (MAY 1 THROUGH OCTOBER 31), UNLESS ALABAMA FORESTRY COMMISSION ISSUES A FIRE DANGER WARNING OR FIRE ALERT OR IF UNDER A CURRENT AIR STAGNATION ADVISORY ISSUED BY THE NATIONAL WEATHER SERVICE OR DURING A "DROUGHT EMERGENCY" DECLARED BY THE GOVERNOR DUE TO UNFAVORABLE CONDITIONS FOR BURNING.
5. TIRES OR OTHER NATURAL OR SYNTHETIC RUBBER PRODUCTS, PLASTICS, HEAVY OILS OR ASPHALTIC BASED OR IMPREGNATED MATERIALS, VINYL MATERIALS, INSULATION, PAPER, CARDBOARD, SALVAGE OR SCRAP MATERIALS, CHEMICALS, GARBAGE, TREATED OR PAINTED WOOD, OR TRASH ARE NOT TO BE USED TO START OR MAINTAIN THE OPERATION OF THE ACD.
6. THE BURNING MUST BE AT LEAST 500 FEET FROM THE NEAREST OCCUPIED DWELLING OTHER THAN A DWELLING LOCATED ON THE PROPERTY ON WHICH THE BURNING IS CONDUCTED.
7. THE ACD SHALL BE CONSTRUCTED, INSTALLED AND OPERATED IN A MANNER CONSISTENT WITH GOOD AIR POLLUTION CONTROL PRACTICE FOR MINIMIZING EMISSIONS OF FLY ASH AND SMOKE.
8. THE CLEANING OUT OF THE ACD PIT IS PERFORMED IN A MANNER TO PREVENT FUGITIVE DUST.
9. THE ACD CANNOT BE FIRED BEFORE 8:00 A.M. AND MUST NOT ACCEPT COMBUSTIBLE MATERIAL AFTER 3:00 PM AND MUST BE ATTENDED AT ALL TIMES.
10. BURNING MAY BE SUBJECT TO ADEM RULES UNDER THE AIR DIVISION AIR POLLUTION CONTROL PROGRAM ADMINISTRATIVE CODE CHAPTER 335-3-3 OPEN BURNING AND INCINERATION, LOCAL REQUIREMENTS AND ANY BURN PERMIT CONDITIONS.

FOAM MITIGATION PLAN

CONTRACTOR SHALL DEVELOP AND SUBMIT TO SCS FOR APPROVAL A FOAM MITIGATION PLAN TO MANAGE FOAM GENERATED DURING THE ASH POND CLOSURE CONSTRUCTION. SOME POTENTIAL SOURCES FOR FOAM FORMATION INCLUDE STORMWATER RUNOFF FROM THE FINAL COVER SYSTEM MATERIALS (SOAPS USED WITH GEOMEMBRANE SEAMING AND TESTING ACTIVITIES AND ORGANIC LUBRICANTS USED DURING ENGINEERED TURF MANUFACTURING), WATER PUMPING ACTIVITIES AND CONSTRUCTION DISTURBANCE. FOAM MITIGATION PLANS TYPICALLY INCLUDE MANAGEMENT MEASURES, PHYSICAL CONTAINMENT, DEFOAMERS (ANTI-FOAM ADDITIVES) AND OTHER MEASURES TO CONTROL FOAM.

MANAGEMENT AND PHYSICAL MEASURES MAY INCLUDE:

1. ENSURING DEWATERING PUMP SUCTION INTAKES ARE BELOW WATER SURFACE TO REDUCE AIR ENTRY
2. USE OF SKIMMERS TO IMPEDE FOAM FROM ENTERING THE PUMP INTAKES
3. BMPS SUCH AS FLOATING BOOMS, SOCKS OR RIP RAP LOCATED WITHIN DRAINAGE CHANNELS OR POND INLETS WITHIN THE ASH POND TO CONTAIN OR BREAK UP FOAM.
4. LIMIT THE EXPOSURE TIME BETWEEN THE ENGINEERED TURF DEPLOYMENT AND THE SAND BALLAST PLACEMENT TO MINIMIZE FOAM FORMATION FROM STORMWATER RUNOFF
5. NON-PHOSPHOROUS CONTAINING SOAPS/DETERGENTS MAY BE REQUIRED BY SCS ENVIRONMENTAL AFFAIRS IN ORDER TO COMPLY WITH THE SITE'S NPDES PERMIT DISCHARGE LIMITS FOR CERTAIN ELEMENTS SUCH AS PHOSPHOROUS.

DEFOAMERS

1. DEFOAMERS MUST BE APPROVED BY SCS ENVIRONMENTAL AFFAIRS PRIOR TO USE.
2. CONTRACTOR SHALL SUBMIT THE DEFOAMER PRODUCT DATA SHEETS AND MANUFACTURER'S HANDLING, STORING AND APPLICATION INSTRUCTIONS FOR APPROVAL.
3. CONTRACTOR SHALL SUBMIT A STATEMENT FROM THE ENGINEERED TURF MANUFACTURER STATING THAT THE DEFOAMER PRODUCT IS SAFE FOR THE TURF MATERIAL AND WILL NOT PREMATURELY DEGRADE THE MATERIAL OR VOID THE MATERIAL WARRANTY.
4. CONTRACTOR SHALL ALSO SUBMIT A STATEMENT FROM THE WATER TREATMENT FACILITY OPERATOR STATING THAT THE DEFOAMER PRODUCT WILL NOT DISRUPT THE WATER TREATMENT PROCESS OR REDUCE TREATMENT CAPACITY.

LEGEND

EXISTING CONDITIONS

- CONTROL POINT
- 680 — EXISTING CONTOURS
- PROPERTY LINE
- APPROXIMATE LIMIT OF ASH POND
- RIGHT-OF-WAY
- E TL — TRANSMISSION LINE
- FO — FIBER OPTIC LINE
- OHP — OVERHEAD POWER LINE
- PW — HDPE PROCESS WATER PIPE
- FM — FORCEMAIN
- RAILROAD
- DRAINAGE CONVEYANCE / EDGE OF WATER
- ACCESS ROAD
- x — FENCE LINE
- TREE LINE
- PB — PULL BOX (DATA OR ELECTRICAL)
- DI — DROP INLET
- BORING LOCATION
- GROUNDWATER MONITORING WELL
- PIEZOMETER
- TEST PIT LOCATION

DEMOLITION

- HEAVY VEGETATION AND CLEARING TO BE REMOVED
- (TBR) — TO BE REMOVED
- STRUCTURE OR FACILITY TO BE REMOVED
- ABANDONED WELL

PROPOSED

- 450 — PROPOSED CONTOURS
- FINAL COVER LIMITS
- 1 — DOWNSLOPE CHANNEL WITH ID#
- 10+00 — PERIMETER BASE LINE WITH STATIONS
- APPROXIMATE LIMIT OF POST CLOSURE C

N

ALABAMA NAD83 WEST US SURVEY FEET
300 0 300 600 FT

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER GILBERT M. HAINES No. 25587
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

REVISIONS

NO.	DATE	BY	APPROVED

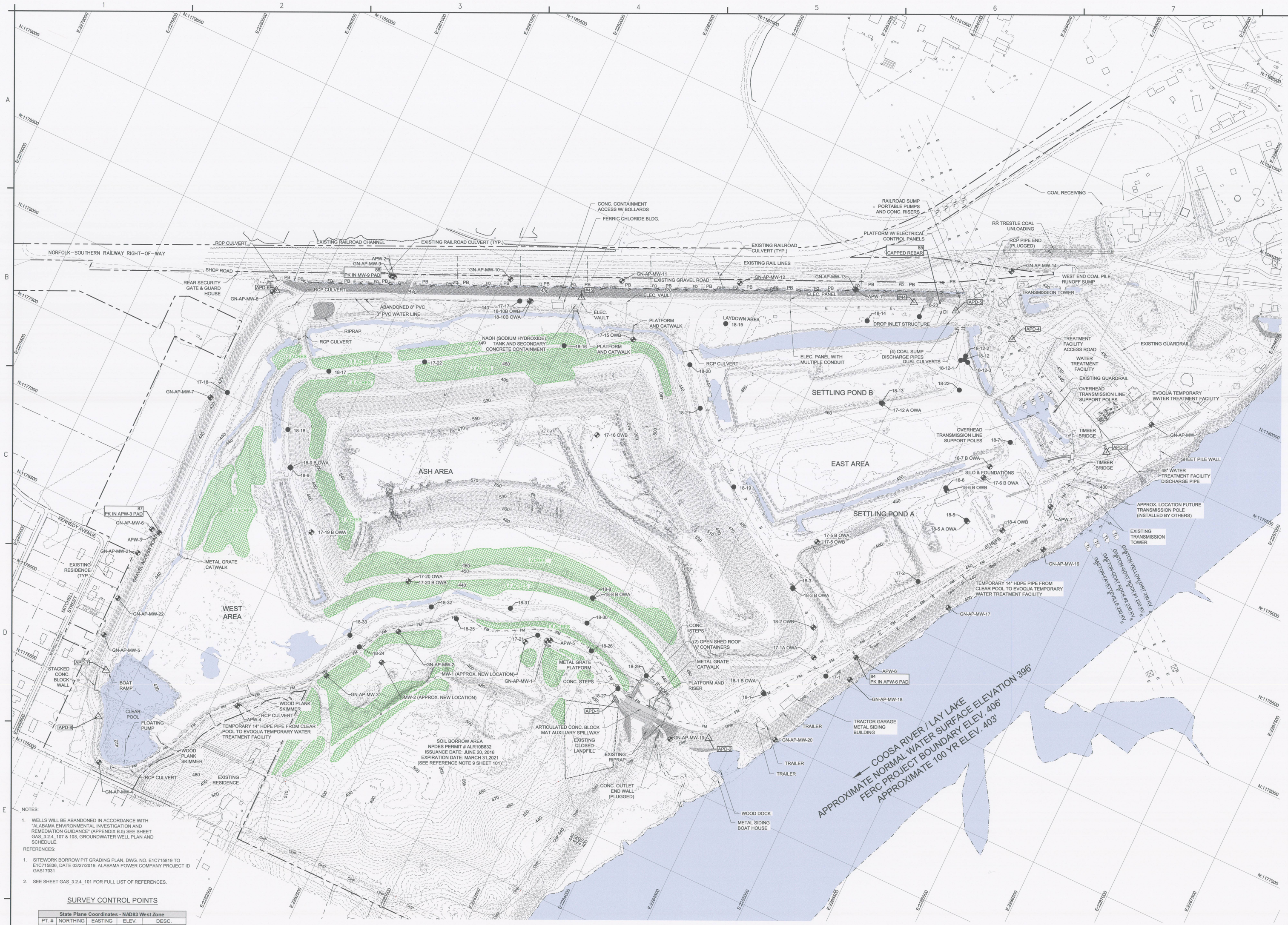
DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

OVERALL SITE PLAN

SHEET NUMBER:	REV. #
GAS_3.2.4_102	0

J:\6166-18-0770 SCS GASTON APCD DETAILED ENGINEERING\SHEET SET - APCD DETAILED ENGINEERING\GAS_3.2.4_100.dwg - 102 OVERALL SITE PLAN 05/29/2019 1:36pm jesse.aldridge



NOTES:

1. WELLS WILL BE ABANDONED IN ACCORDANCE WITH "ALABAMA ENVIRONMENTAL INVESTIGATION AND REMEDIATION GUIDANCE" (APPENDIX B.5) SEE SHEET GAS_3.2.4_107 & 108, GROUNDWATER WELL PLAN AND SCHEDULE.

REFERENCES:

1. SITEWORK BORROW PIT GRADING PLAN, DWG. NO. E1C715819 TO E1C715836, DATE 03/27/2019. ALABAMA POWER COMPANY PROJECT ID GAS17031
2. SEE SHEET GAS_3.2.4_101 FOR FULL LIST OF REFERENCES.

SURVEY CONTROL POINTS

State Plane Coordinates - NAD83 West Zone				
PT. #	NORTHING	EASTING	ELEV.	DESC.
44	1179820.651	2284358.487	-	RR1
45	1178975.047	2282490.767	-	RR2

Output from Corpscon 6.0.1

State Plane Coordinates - NAD83 West Zone				
PT. #	NORTHING	EASTING	ELEV.	DESC.
APD-1	1176810.811	2283740.468	-	DIKE DESIGN C/L
APD-2	1176839.726	2284362.125	-	DIKE DESIGN C/L
APD-3	1179487.347	2285826.891	-	DIKE DESIGN C/L
APD-4	1179872.128	2285003.089	-	DIKE DESIGN C/L
APD-5	1179884.279	2284613.557	-	DIKE DESIGN C/L
APD-6	1178212.309	2280769.775	-	DIKE DESIGN C/L
APD-7	1175637.944	2280820.354	-	DIKE DESIGN C/L
APD-8	1175357.204	2280900.484	-	DIKE DESIGN C/L

Output from Corpscon 6.0.1

State Plane Coordinates - NAD83 West Zone				
PT. #	NORTHING	EASTING	ELEV.	DESC.
84	1177685.40	2284967.36	448.17	PK IN MW PAD
86	1179886.18	2284503.55	445.69	CAPPED REBAR
88	1178601.98	2281366.95	422.04	PK IN MW PAD
89	1176553.09	2280753.52	445.54	PK IN MW PAD

ALABAMA NAD83 WEST US SURVEY FEET

200 0 200 400 FT

J:\6166-18-0770 SCS GASTON APCD DETAILED ENGINEERING\SHEET SET - APCD DETAILED ENGINEERING\GAS_3.2.4_100.dwg - 103 EXISTING CONDITIONS 05/29/2019 1:36pm jesse.aldridge

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED No. 25787 PROFESSIONAL ENGINEER GILBERT M. HAINES
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

EXISTING CONDITIONS PLAN

SHEET NUMBER:	REV.
GAS_3.2.4_103	0

NOTES:

1. WELLS WILL BE ABANDONED IN ACCORDANCE WITH "ALABAMA ENVIRONMENTAL INVESTIGATION AND REMEDIATION GUIDANCE" (APPENDIX B.5) SEE SHEET GAS_3.2.4_107 & 108, GROUNDWATER WELL PLAN AND SCHEDULE.

REFERENCES:

1. SITEWORK BORROW PIT GRADING PLAN, DWG. NO. E1C715819 TO E1C715836, DATE 03/27/2019. ALABAMA POWER COMPANY PROJECT ID GAS17031
2. SEE SHEET GAS_3.2.4_101 FOR FULL LIST OF REFERENCES.

SURVEY CONTROL POINTS

State Plane Coordinates - NAD83 West Zone				
PT. #	NORTHING	EASTING	ELEV.	DESC.
44	1179820.651	2284358.487	-	RR1
45	1178975.047	2282490.767	-	RR2

Output from Corpscon 6.0.1

State Plane Coordinates - NAD83 West Zone				
PT. #	NORTHING	EASTING	ELEV.	DESC.
APD-1	1176810.811	2283740.468	-	DIKE DESIGN C/L
APD-2	1176839.726	2284362.125	-	DIKE DESIGN C/L
APD-3	1179487.347	2285826.891	-	DIKE DESIGN C/L
APD-4	1179872.128	2285003.089	-	DIKE DESIGN C/L
APD-5	1179884.279	2284613.557	-	DIKE DESIGN C/L
APD-6	1178212.309	2280769.775	-	DIKE DESIGN C/L
APD-7	1175637.944	2280820.354	-	DIKE DESIGN C/L
APD-8	1175357.204	2280900.484	-	DIKE DESIGN C/L

Output from Corpscon 6.0.1

State Plane Coordinates - NAD83 West Zone				
PT. #	NORTHING	EASTING	ELEV.	DESC.
84	1177685.40	2284967.36	448.17	PK IN MW PAD
86	1179886.18	2284503.55	445.69	CAPPED REBAR
88	1178601.98	2281366.95	422.04	PK IN MW PAD
89	1176553.09	2280753.52	445.54	PK IN MW PAD

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421–3400

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 25987 GILBERT M. HAINES
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166–18–0770

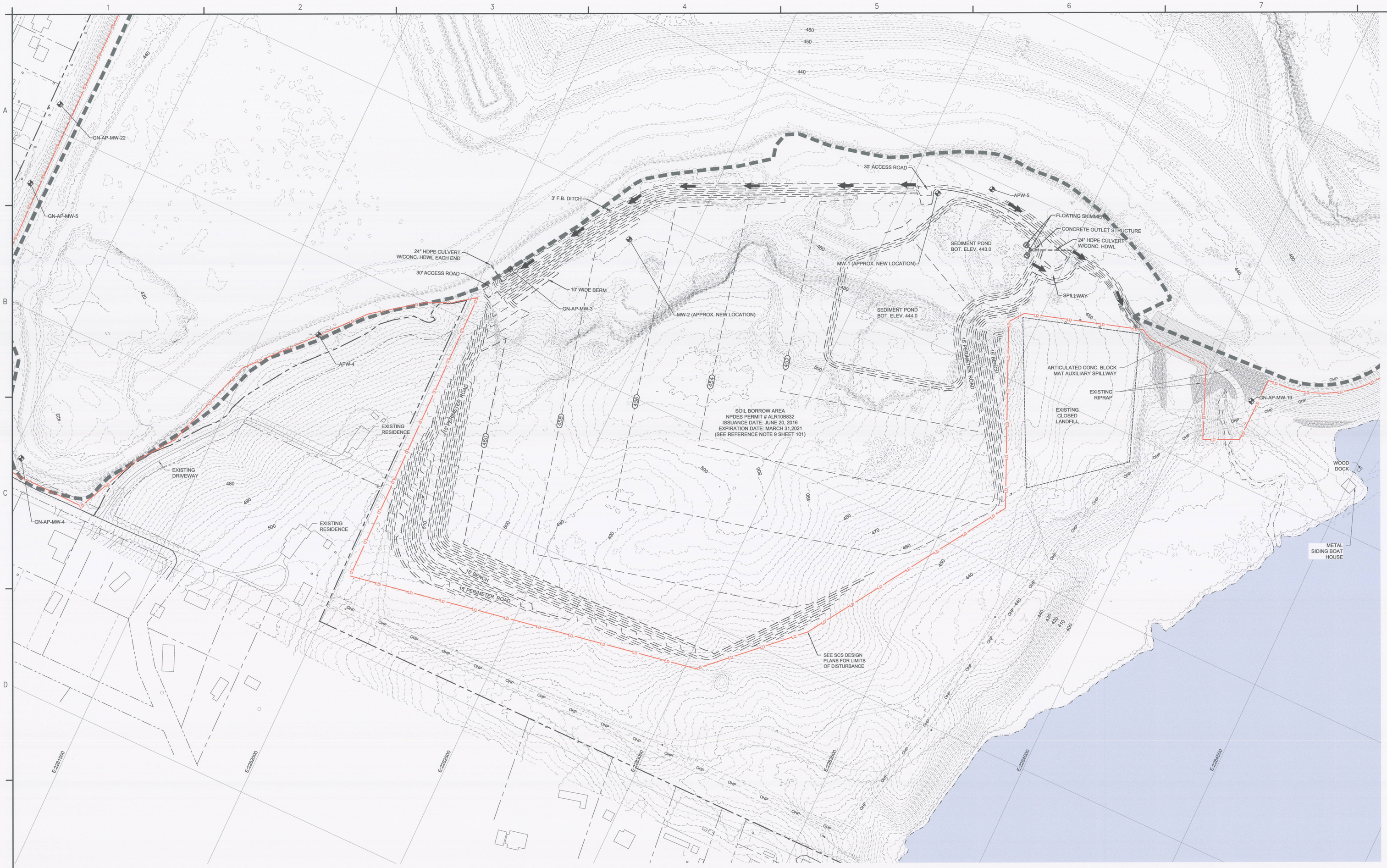
REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

CLEARING AND DEMOLITION PLAN

SHEET NUMBER:	REV. #
GAS_3.2.4_104	0



NOTES:

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REFERENCES:

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2. SEE SHEET GAS_3.2.4_101 FOR FULL LIST OF REFERENCES.

SURVEY CONTROL POINTS

State Plane Coordinates - NAD83 West Zone				
PT. #	NORTHING	EASTING	ELEV.	DESC.
44	1179820.651	2284358.487	-	RR1
45	1178975.047	2282490.767	-	RR2

Output from Corpscon 6.0.1

State Plane Coordinates - NAD83 West Zone				
PT. #	NORTHING	EASTING	ELEV.	DESC.
APD-1	1176810.811	2283740.468	-	DIKE DESIGN C/L
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89	1176553.09	2280753.52	445.54	PK IN MW PAD

N

ALABAMA NAD83 WEST US SURVEY FEET

100 0 100 200 FT

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 25587 GILBERT M. HAINES
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

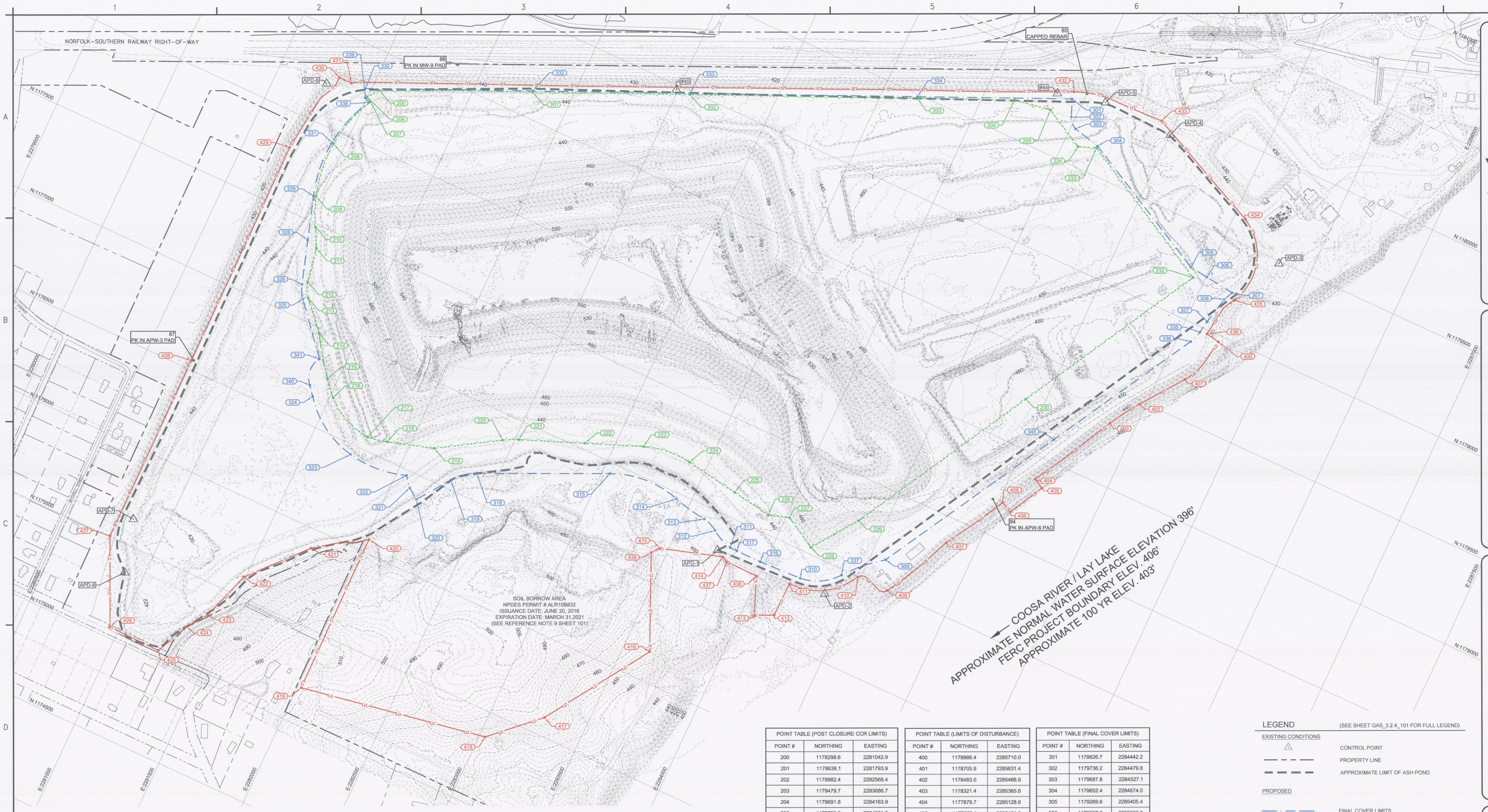
REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J.ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

BORROW AREA PLAN

SHEET NUMBER:	REV. #
GAS_3.2.4_105	0



NOTES:

1. WELLS WILL BE ABANDONED IN ACCORDANCE WITH "ALABAMA ENVIRONMENTAL INVESTIGATION AND REMEDIATION GUIDANCE" (APPENDIX B.5) SEE SHEET GAS_3.2.4_107 & 108, GROUNDWATER WELL PLAN AND SCHEDULE.

REFERENCES:

1. SITEWORK BORROW PIT GRADING PLAN, DWG. NO. E1C715819 TO E1C715836, DATE 03/27/2019. ALABAMA POWER COMPANY PROJECT ID GAS17031
2. SEE SHEET GAS_3.2.4_101 FOR FULL LIST OF REFERENCES.

SURVEY CONTROL POINTS

State Plane Coordinates - NAD83 West Zone				
PT. #	NORTHING	EASTING	ELEV.	DESC.
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Output from Corpscon 6.0.1

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88	1178601.98	2281366.95	422.04	PK IN MW PAD
89	1176553.09	2280753.52	445.54	PK IN MW PAD

POINT TABLE (POST CLOSURE CCR LIMITS)		
POINT #	NORTHING	EASTING
200	1178298.6	2281042.9
201	1178638.1	2281793.9
202	1178982.4	2282568.4
203	1179479.7	2283686.7
204	1179691.8	2284163.9
205	1179723.8	2284361.6
206	1178238.6	2280996.4
207	1178222.4	2281024.9
208	1177932.1	2280941.6
209	1177633.8	2280976.2
210	1177483.2	2281043.5
211	1177381.1	2281095.5
212	1177196.2	2281130.7
213	1177118.5	2281169.5
214	1176971.5	2281303.2
215	1176767.1	2281446.6
216	1176687.0	2281518.0
217	1176572.2	2281775.4
218	1176592.5	2281882.1
219	1176668.0	2282126.4
220	1176862.5	2282440.5
221	1176902.0	2282518.6
222	1177033.8	2282849.3
223	1177151.1	2283143.7
224	1177178.8	2283403.2
225	1177132.8	2283692.5
226	1177098.6	2283907.8
227	1177133.3	2284017.2
228	1177035.6	2284190.0
229	1177275.3	2284361.4
230	1178249.9	2284900.6
232	1179224.5	2285439.7
233	1179641.4	2284673.3
234	1179605.3	2284580.4

POINT TABLE (LIMITS OF DISTURBANCE)		
POINT #	NORTHING	EASTING
400	1178966.4	2285710.0
401	1178705.9	2285631.4
402	1178483.0	2285466.9
403	1178321.4	2285365.6
404	1177879.7	2285128.6
405	1177850.1	2285181.0
406	1177659.7	2285080.5
407	1177364.7	2284838.2
408	1177690.5	2285022.6
409	1176997.4	2284660.0
410	1176996.7	2284485.4
411	1176808.5	2284168.2
412	1176620.1	2284164.4
413	1176575.5	2284068.8
414	1176789.6	2283781.4
415	1176689.4	2283453.8
416	1176159.1	2283640.0
417	1175599.1	2283276.2
418	1175368.7	2283030.6
419	1175193.4	2282022.4
420	1176072.2	2282016.0
421	1175899.6	2281753.8
422	1175605.6	2281491.1
423	1175337.5	2281402.3
424	1175232.6	2281325.1
425	1175051.7	2281240.5
426	1175057.0	2280952.4
427	1175502.8	2280745.0
428	1176546.3	2280741.6
429	1177814.7	2280735.5
430	1178270.8	2280819.1
431	1178271.2	2280889.9
432	1179666.2	2284435.3
433	1179921.7	2284928.9
434	1179627.3	2285563.3
435	1179207.1	2285690.9
436	1178979.6	2285635.7
437	1176773.8	2283811.4
438	1176772.5	2283988.0
439	1176648.7	2283422.7

POINT TABLE (FINAL COVER LIMITS)		
POINT #	NORTHING	EASTING
301	1179826.7	2284442.2
302	1179736.2	2284479.8
303	1179687.8	2284527.1
304	1179652.4	2284674.0
305	1179269.6	2285405.4
306	1179257.3	2285506.0
307	1179237.9	2285664.6
308	1179187.5	2285641.2
309	1177144.2	2284582.1
310	1176860.3	2284207.6
311	1176851.8	2283796.2
312	1176901.5	2283683.3
313	1176933.4	2283604.6
314	1176969.2	2283423.5
315	1176942.0	2283040.8
316	1176850.0	2283975.4
317	1176850.2	2283836.0
318	1176641.4	2282390.9
319	1176549.9	2282279.2
320	1176376.5	2282155.1
321	1176418.6	2282096.3
322	1176471.6	2282052.3
323	1176448.1	2281732.6
324	1176646.3	2281415.5
325	1177100.8	2281145.9
326	1177171.2	2281108.0
327	1179039.9	2285607.7
328	1177400.9	2281035.2
329	1177630.5	2280962.5
330	1178276.5	2280969.7
331	1177934.1	2280931.0
332	1178643.6	2281791.8
333	1178988.9	2282565.5
334	1179488.0	2283683.5
335	1178972.1	2285596.7
336	1178904.9	2285573.1
337	1176969.1	2284402.0
338	1178215.0	2281017.7
339	1178229.9	2280991.4
340	1176694.9	2281376.1
341	1176844.6	2281361.5
345	1178115.0	2285128.5

LEGEND

(SEE SHEET GAS_3.2.4_101 FOR FULL LEGEND)

EXISTING CONDITIONS

- CONTROL POINT
- PROPERTY LINE
- APPROXIMATE LIMIT OF ASH POND

PROPOSED

- FINAL COVER LIMITS
- PERIMETER BASE LINE WITH STATIONS
- APPROXIMATE LIMIT OF POST CLOSURE CCR

N

ALABAMA NAD83 WEST US SURVEY FEET

200 0 200 400 FT

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421–3400

ALABAMA LICENSED No. 25907 PROFESSIONAL ENGINEER GILBERT M. HAINES
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166–18–0770

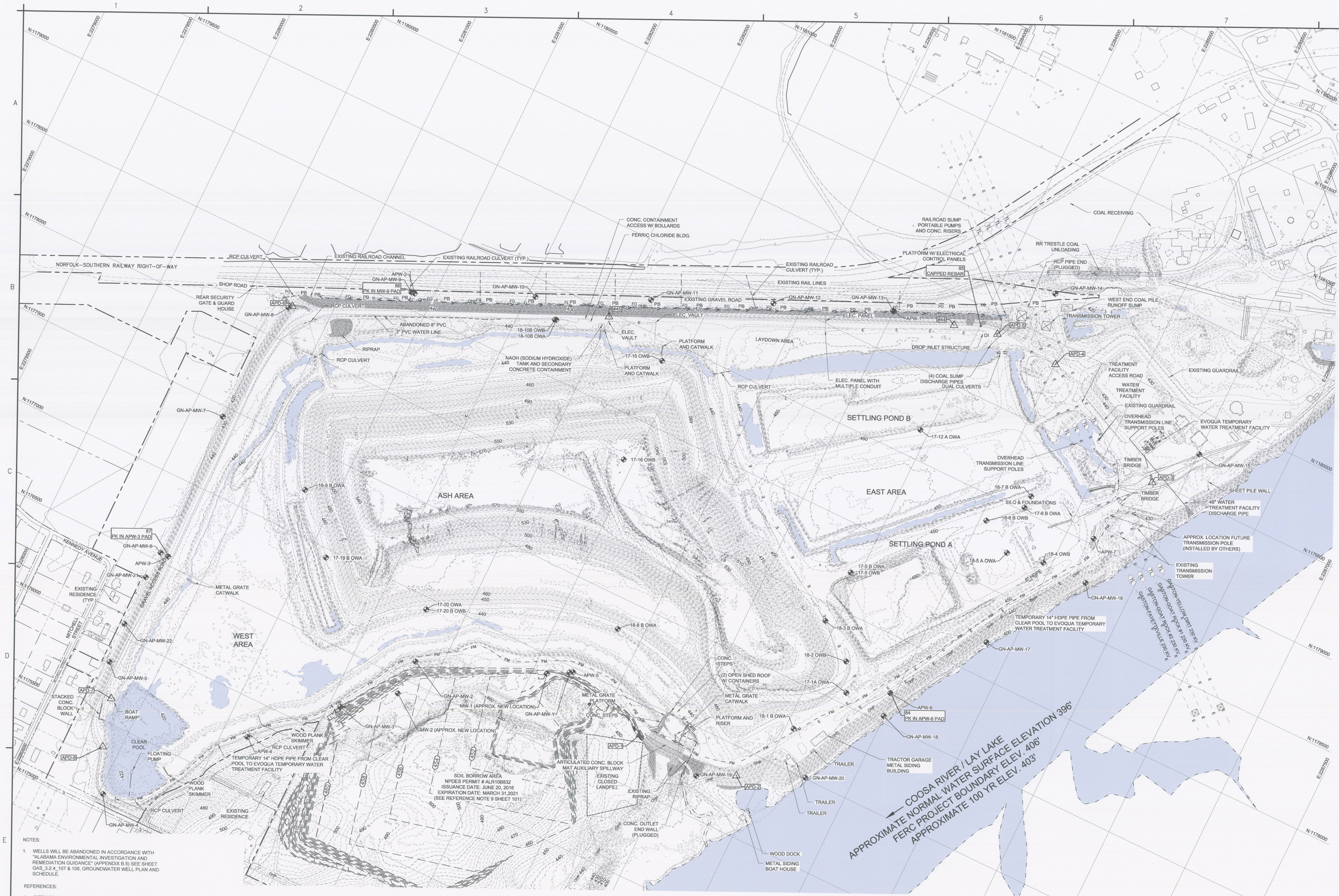
REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J.ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

OVERALL LAYOUT PLAN

SHEET NUMBER:	REV. #
GAS_3.2.4_106	0



NOTES:

1. WELLS WILL BE ABANDONED IN ACCORDANCE WITH "ALABAMA ENVIRONMENTAL INVESTIGATION AND REMEDIATION GUIDANCE" (APPENDIX B.5) SEE SHEET GAS_3.2.4_107 & 108, GROUNDWATER WELL PLAN AND SCHEDULE.

REFERENCES:

1. SITEWORK BORROW PIT GRADING PLAN, DWG. NO. E1C715819 TO E1C715836, DATE 03/27/2019. ALABAMA POWER COMPANY PROJECT ID GAS17031
2. SEE SHEET GAS_3.2.4_101 FOR FULL LIST OF REFERENCES.

SURVEY CONTROL POINTS

State Plane Coordinates - NAD83 West Zone				
PT. #	NORTHING	EASTING	ELEV.	DESC.
44	1179820.651	2284358.487	-	RR1
45	1178975.047	2282490.767	-	RR2

Output from Corpscon 6.0.1

State Plane Coordinates - NAD83 West Zone				
PT. #	NORTHING	EASTING	ELEV.	DESC.
APD-1	1176810.811	2283740.468	-	DIKE DESIGN C/L
APD-2	1176839.726	2284362.125	-	DIKE DESIGN C/L
APD-3	1179487.347	2285826.891	-	DIKE DESIGN C/L
APD-4	1179872.128	2285003.089	-	DIKE DESIGN C/L
APD-5	1179884.279	2284613.557	-	DIKE DESIGN C/L
APD-6	1178212.309	2280769.775	-	DIKE DESIGN C/L
APD-7	1175637.944	2280820.354	-	DIKE DESIGN C/L
APD-8	1175357.204	2280900.484	-	DIKE DESIGN C/L

Output from Corpscon 6.0.1

State Plane Coordinates - NAD83 West Zone				
PT. #	NORTHING	EASTING	ELEV.	DESC.
84	1177685.40	2284967.36	448.17	PK IN MW PAD
86	1179886.18	2284503.55	445.69	CAPPED REBAR
88	1178601.98	2281366.95	422.04	PK IN MW PAD
89	1176553.09	2280753.52	445.54	PK IN MW PAD

REFERENCES:

1. BORINGS AND PIEZOMETERS DESIGNATED BY 17- # WERE INSTALLED WITHIN THE ASH POND AND DIKES BY WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC. (FORMERLY AMEC FOSTER WHEELER) FROM JUNE 12, 2017 TO JULY 21, 2017, DOCUMENTED IN THE SITE CHARACTERIZATION REPORT ADDENDUM DATED 11/17/17.
2. BORINGS AND PIEZOMETERS DESIGNATED BY 18- # WERE INSTALLED WITHIN THE ASH POND AND DIKES BY WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC. (FORMERLY AMEC FOSTER WHEELER) FROM FEBRUARY 19, 2018 TO APRIL 19, 2018, JUNE 4, 2018 TO JUNE 6, 2018 AND AUGUST 14, 2018 TO AUGUST 16, 2018, DOCUMENTED IN THE SITE CHARACTERIZATION REPORT ADDENDUM DATED 10/05/18.
3. GROUNDWATER WELLS DESIGNATED BY GN-AP-MW- # WERE INSTALLED OUTSIDE THE LIMITS OF AND AROUND THE ASH POND BY SOUTHERN COMPANY SERVICES FROM SEPTEMBER 1, 2015 TO DECEMBER 9, 2015. WELL LOGS AND SURVEY DATA PROVIDED BY SOUTHERN COMPANY SERVICES.
4. GROUNDWATER WELLS DESIGNATED BY APW- # WERE INSTALLED OUTSIDE THE LIMITS OF AND AROUND THE ASH POND BY SOUTHERN COMPANY SERVICES FROM JUNE 12, 2013 TO JUNE 20, 2013. WELL LOGS AND SURVEY DATA PROVIDED BY SOUTHERN COMPANY SERVICES.
5. PIEZOMETERS AND WELLS ARE SHOWN ON THE GROUNDWATER WELL PLAN AND EXISTING CONDITIONS PLAN AND BORING LOCATIONS ARE SHOWN ON THE EXISTING CONDITIONS PLAN.

ALABAMA NAD83 WEST US SURVEY FEET
200 0 200 400 FT

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED No. 29587 PROFESSIONAL ENGINEER GILBERT M. HAINES
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON
31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No: 6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J.ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

GROUNDWATER WELL PLAN

SHEET NUMBER:	REV. #
GAS_3.2.4_107	0

J:\6166-18-0770 SCS GASTON APCD DETAILED ENGINEERING\SHEET SET - APCD DETAILED ENGINEERING\GAS_3.2.4_100.dwg -- 107 GROUNDWATER WELL PLAN 05/29/2019 1:37pm jesse.aldridge

Monitoring Well and Piezometer Disruption Schedule

Monitoring Well/ Piezometer ID	X-Coordinate	Y-Coordinate	Well Type	Screened Unit	Top of Casing Elevation (ft amsl)	Well Total Depth (ft bgs)	Location per Ash Pond Area	Expected Abandonment Schedule
GN-AP-MW-4	2281025.7499	1175103.7955	OWB	Bedrock	440.574	96.1	Southwest	2nd Quarter 2019
APW-5	2283219.9640	1176973.4110	OWB	Bedrock	460.22	35.3	Southwest	2nd Quarter 2019
GN-AP-MW-1	2283201.9403	1176962.4094	OWB	Bedrock	460.543	199.12	Southwest	2nd Quarter 2019
GN-AP-MW-2	2282351.4636	1176623.0840	OWB	Bedrock	445.668	126.03	Southwest	3rd Quarter 2019
Groundwater Piezometers within the Ash Pond								
18-5	2285233.0000	1178734.0000	OWA	Ash	455.279	57.52	East (South Dike)	10/1/2018 completed
17-5	2284447.9700	1178226.4300	OWB	Bedrock	451.07	95.07	East (South Dike)	2nd Quarter 2019
17-1A	2284850.7700	1177496.7400	OWA	Ash	452.26	63.91	East (South Dike)	4th Quarter 2019
17-12	2284449.4600	1179171.9500	OWA	Ash	459.36	53.72	East	4th Quarter 2019
17-15	2282889.0100	1178875.3700	OWB	Bedrock	451.28	77.76	East (North Dike)	4th Quarter 2019
18-1	2284547.0000	1177238.0000	OWA	Overburden	448.952	58.02	East (South Dike)	4th Quarter 2019
18-2	2284654.0000	1177737.0000	OWB	Bedrock	459.85	103.32	East (South Dike)	4th Quarter 2019
18-9	2281315.0000	1177259.0000	OWA	Ash	450.28	39.01	West (toe Ash Stack)	4th Quarter 2019
18-10B	2282218.0000	1178822.0000	OWA	Overburden	446.385	38.7	Ash Stack (North Dike)	4th Quarter 2019
18-10C	2282209.0000	1178819.0000	OWB	Bedrock	448.563	65.13	Ash Stack (North Dike)	4th Quarter 2019
17-19	2281602.8900	1176949.7200	OWA	Ash	454.4	49.4	West (toe Ash Stack)	2nd Quarter 2019
18-3	2284437.0000	1177901.0000	OWA	Ash	454.39	56.86	East (South Dike)	2nd Quarter 2019
17-16	2282940.5800	1178246.3300	OWA	Ash	571.57	201.5	Ash Stack	2nd Quarter 2020
17-20	2282278.0000	1176934.0000	OWB	Bedrock	446.33	84.21	Southwest (toe Ash Stack)	2nd Quarter 2020
17-20B	2282278.0000	1176934.0000	OWA	Ash	444	35.19	Southwest (toe Ash Stack)	2nd Quarter 2020
18-8	2283348.0000	1177321.0000	OWA	Ash	447.218	41.52	Southwest (toe Ash Stack)	2nd Quarter 2020
17-5B	2284453.0000	1178232.0000	OWA	Ash	451.19	54.9	East (South Dike)	3rd Quarter 2020
17-6B	2285210.0000	1179024.0000	OWA	Ash	451.72	52.86	East	3rd Quarter 2020
18-4	2285453.0000	1178776.0000	OWB	Bedrock	455.279	88.75	East (South Dike)	3rd Quarter 2020
18-6	2285038.0000	1178854.0000	OWA	Ash	452.291	57.15	East (South Dike)	3rd Quarter 2020
18-7	2285244.0000	1179263.0000	OWA	Ash	451.854	55.2	East (South Dike)	3rd Quarter 2020

NOTES:

1. WELLS WILL BE ABANDONED IN ACCORDANCE WITH "ALABAMA ENVIRONMENTAL INVESTIGATION AND REMEDIATION GUIDANCE" (APPENDIX B.5) SEE SHEET GAS_3.2.4_107 AND 108, GROUNDWATER WELL PLAN FOR SCHEDULE.

REFERENCES:

1. SEE SHEET GAS_3.2.4_101 FOR FULL LIST OF REFERENCES.
2. BORINGS AND PIEZOMETERS DESIGNATED BY 17-# WERE INSTALLED WITHIN THE ASH POND AND DIKES BY WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC. (FORMERLY AMEC FOSTER WHEELER) FROM JUNE 12, 2017 TO JULY 21, 2017, DOCUMENTED IN THE SITE CHARACTERIZATION REPORT ADDENDUM DATED 11/17/17.
3. BORINGS AND PIEZOMETERS DESIGNATED BY 18-# WERE INSTALLED WITHIN THE ASH POND AND DIKES BY WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC. (FORMERLY AMEC FOSTER WHEELER) FROM FEBRUARY 19, 2018 TO APRIL 19, 2018, JUNE 4, 2018 TO JUNE 6, 2018 AND AUGUST 14, 2018 TO AUGUST 16, 2018, DOCUMENTED IN THE SITE CHARACTERIZATION REPORT ADDENDUM DATED 10/05/18.
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5. GROUNDWATER WELLS DESIGNATED BY APW-# WERE INSTALLED OUTSIDE THE LIMITS OF AND AROUND THE ASH POND BY SOUTHERN COMPANY SERVICES FROM JUNE 12, 2013 TO JUNE 20, 2013, WELL LOGS AND SURVEY DATA PROVIDED BY SOUTHERN COMPANY SERVICES.
6. PIEZOMETERS AND WELLS ARE SHOWN ON THE GROUNDWATER WELL PLAN AND EXISTING CONDITIONS PLAN AND BORING LOCATIONS ARE SHOWN ON THE EXISTING CONDITIONS PLAN.

Monitoring Well and Piezometer Construction Details

Monitoring Well/ Piezometer ID	X-Coordinate	Y-Coordinate	Well Type	Screened Unit	Top of Casing Elevation (ft amsl)	Well Total Depth (ft bgs)
GN-AP-MW-1	2283201.9403	1176962.4094	OWB	Bedrock	460.543	199.12
GN-AP-MW-2	2282351.4636	1176623.0840	OWB	Bedrock	445.668	126.03
GN-AP-MW-3	2282065.8501	1176185.5970	OWB	Bedrock	447.14	81.6
GN-AP-MW-4	2281025.7499	1175103.7955	OWB	Bedrock	440.574	96.1
GN-AP-MW-5	2280716.8491	1175831.2038	OWB	Bedrock	431.303	63.05
GN-AP-MW-6	2280706.6943	1176547.6019	OWB	Bedrock	427.845	50.4
GN-AP-MW-7	2280684.9061	1177439.6441	OWB	Bedrock	420.022	64.67
GN-AP-MW-8	2280752.7293	1178195.8021	OWB	Bedrock	429.631	81.4
GN-AP-MW-9	2281371.1414	1178596.1089	OWB	Bedrock	424.851	135.69
GN-AP-MW-10	2282046.3559	1178892.1843	OWB	Bedrock	425.693	82.6
GN-AP-MW-11	2282672.4863	1179174.2151	OWB	Bedrock	425.393	77.44
GN-AP-MW-12	2283336.1072	1179471.6968	OWB	Bedrock	425.223	89.5
GN-AP-MW-13	2283994.4703	1179739.5401	OWB	Bedrock	424.04	65.42
GN-AP-MW-14	2284818.8885	1180250.9336	OWB	Bedrock	427.204	97.05
GN-AP-MW-15R	2286006.3078	1179760.6621	OWB	Bedrock	442.602	75.24
GN-AP-MW-16	2285729.7239	1178776.5510	OWB	Bedrock	422.296	50.35
GN-AP-MW-17	2285353.6139	1178201.1348	OWB	Bedrock	407.753	67.42
GN-AP-MW-18	2284994.7460	1177539.8591	OWB	Bedrock	416.13	60.89
GN-AP-MW-19	2284149.1922	1176734.3508	OWB	Bedrock	416.157	91.9
GN-AP-MW-20	2284735.9873	1177005.7618	OWB	Bedrock	406.654	88.3
GN-AP-MW-21	2280690.6600	1176379.2700	OWB	Bedrock	428.25	31.6
GN-AP-MW-22	2280698.6100	1176073.1300	OWB	Bedrock	427.11	27
17-1A	2284850.7700	1177496.7400	OWA	Ash	452.26	63.91
17-5	2284447.9700	1178226.4300	OWB	Bedrock	451.07	95.07
17-5B	2284453.0000	1178232.0000	OWA	Ash	451.19	54.9
17-6B	2285210.0000	1179024.0000	OWA	Ash	451.72	52.86
17-12A	2284449.4600	1179171.9500	OWA	Ash	459.36	53.72
17-15	2282889.0100	1178875.3700	OWB	Bedrock	451.28	77.76
17-16	2282940.5800	1178246.3300	OWA	Ash	571.57	201.5
17-19B	2281602.8900	1176949.7200	OWA	Ash	454.4	49.4
17-20	2282278.0000	1176934.0000	OWB	Bedrock	446.33	84.21
17-20B	2282278.0000	1176934.0000	OWA	Ash	444	35.19
18-1B	2284547.0000	1177238.0000	OWA	Overburden	448.952	58.02
18-2	2284654.0000	1177737.0000	OWB	Bedrock	459.85	103.32
18-3B	2284437.0000	1177901.0000	OWA	Ash	454.39	56.86
18-4	2285453.0000	1178776.0000	OWB	Bedrock	455.279	88.75
18-5A	2285233.0000	1178734.0000	OWA	Ash	455.279	57.52
18-6B	2285038.0000	1178854.0000	OWA	Ash	452.291	57.15
18-7B	2285244.0000	1179263.0000	OWA	Ash	451.854	55.2
18-8B	2283348.0000	1177321.0000	OWA	Ash	447.218	41.52
18-9B	2281315.0000	1177259.0000	OWA	Ash	450.28	39.01
18-10B	2282218.0000	1178822.0000	OWA	Overburden	446.385	38.7
18-10C	2282209.0000	1178819.0000	OWB	Bedrock	448.563	65.13
APW-1	2284000.4210	1179741.1980	OWB	Bedrock	423.9	39.8
APW-2	2281391.4090	1178598.0850	OWB	Bedrock	424.46	20
APW-3	2280757.6350	1176547.2460	OWB	Bedrock	448.13	50.5
APW-4	2281648.0620	1175783.6920	OWB	Bedrock	442.95	40.2
APW-5	2283219.9640	1176973.4110	OWB	Bedrock	460.22	35.3
APW-6	2284971.1460	1177679.8100	OWB	Bedrock	450.74	70.1
APW-7	2285659.1980	1179035.5150	OWB	Bedrock	448.38	59.6

* Piezometer (PZ) Data from available boring logs dated 3/2012

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED No. 29987 PROFESSIONAL ENGINEER GILBERT M. HAINES
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

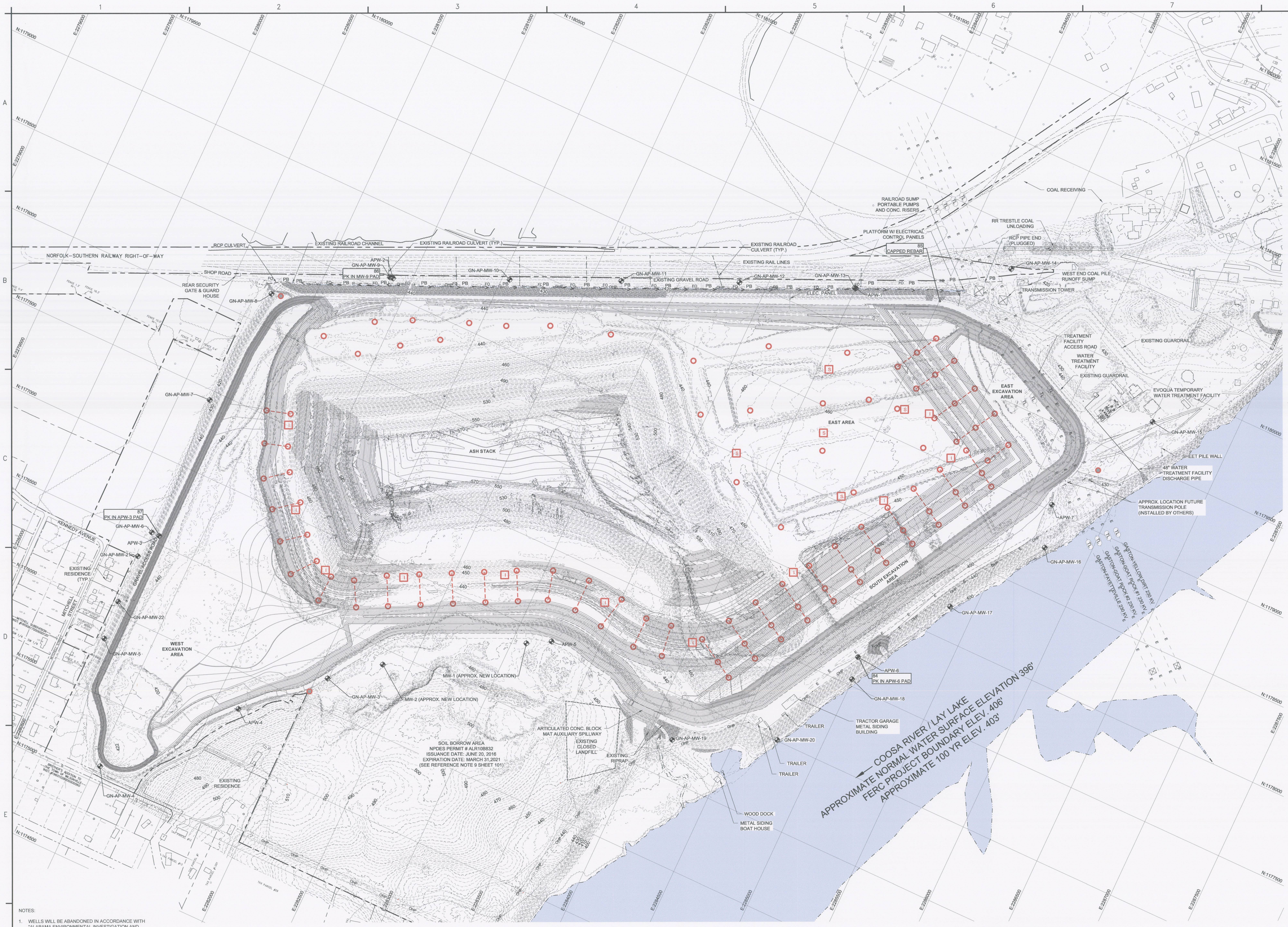
REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J.ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

GROUNDWATER WELL TABLES

SHEET NUMBER:	REV. #
GAS_3.2.4_108	0



NOTES:

1. WELLS WILL BE ABANDONED IN ACCORDANCE WITH "ALABAMA ENVIRONMENTAL INVESTIGATION AND REMEDIATION GUIDANCE" (APPENDIX B.5) SEE SHEET GAS_3.2.4_107 & 108, GROUNDWATER WELL PLAN AND SCHEDULE.

REFERENCES:

1. SITEWORK BORROW PIT GRADING PLAN, DWG. NO. E1C715819 TO E1C715836, DATE 03/27/2019. ALABAMA POWER COMPANY PROJECT ID GAS17031
2. SEE SHEET GAS_3.2.4_101 FOR FULL LIST OF REFERENCES.

SURVEY CONTROL POINTS

State Plane Coordinates - NAD83 West Zone				
PT. #	NORTHING	EASTING	ELEV.	DESC.
84	1177685.40	2284967.36	448.17	PK IN MW PAD
86	1179886.18	2284503.55	445.69	CAPPED REBAR
88	1178601.98	2281366.95	422.04	PK IN MW PAD
89	1176553.09	2280753.52	445.54	PK IN MW PAD

CONCEPTUAL CONSTRUCTION INSTRUMENTATION

- TRANSECT OF 3 PIEZOMETERS TO MONITOR ASH EXCAVATION SLOPE SPACED APPROXIMATELY 200-FT ON CENTER (CONSTRUCTION SAFETY AND SLOPE STABILITY)
- TRANSECT OF 2 PIEZOMETERS TO MONITOR ASH EXCAVATION SLOPE SPACED APPROXIMATELY 200-FT ON CENTER (CONSTRUCTION SAFETY AND SLOPE STABILITY)
- AREA PIEZOMETERS TO MONITOR RESPONSE TO FILL PLACEMENT (CONSTRUCTION SAFETY)
- SLOPE INCLINOMETER SPACED APPROXIMATELY 500-FT ON CENTER (CONSTRUCTION SAFETY AND SLOPE STABILITY)
- SETTLEMENT INSTRUMENTATION
- DATA LOGGER BASE STATION

N

ALABAMA NAD83 WEST US SURVEY FEET

200 0 200 400 FT

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421–3400

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 25907 GILBERT M. HAINES

05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166–18–0770

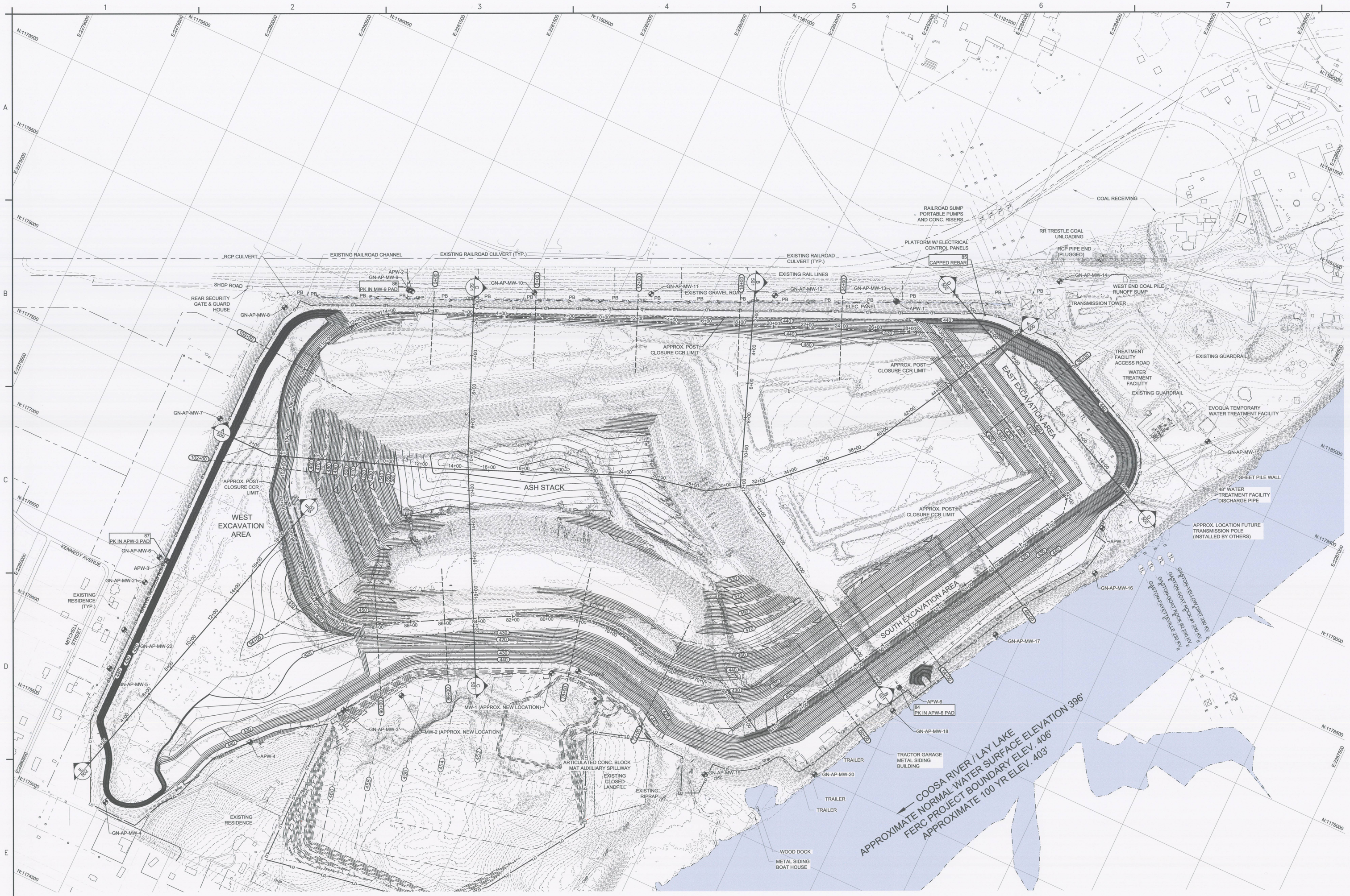
REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J.ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

PRELIMINARY INSTRUMENTATION PLAN

SHEET NUMBER:	REV. #
GAS_3.2.4_109	0



NOTES:

1. PROPOSED CONTOUR TIE-IN LOCATIONS TO EXISTING CONTOURS MAY VARY DUE TO CHANGES IN EXISTING TOPOGRAPHY FROM ONGOING OPERATIONS UNTIL THE TIME CONSTRUCTION COMMENCES.

2. BOTTOM OF POND ELEVATIONS BASED ON SEGCO NO.1 STEAM PLANT, ASH SETTLING POND - PLAN & SECTIONS, D-116482 SHEETS 1 THROUGH 4, ALABAMA POWER COMPANY REV 2 - 3/23/1960. DIKE DESIGN LOCATION, DIKE DIMENSIONS AND BOTTOM OF ASH TOPOGRAPHY. ORIGINAL DESIGN COORDINATES PROVIDED ON NAD27 EAST.

NOTES:

1. SEE SHEET GAS_3.2.4_101 FOR FULL LIST OF REFERENCES.

SURVEY CONTROL POINTS

State Plane Coordinates - NAD83 West Zone				
PT. #	NORTHING	EASTING	ELEV.	DESC.
84	1177685.40	2284967.36	448.17	PK IN MW PAD
86	1179886.18	2284503.55	445.69	CAPPED REBAR
88	1178601.98	2281368.95	422.04	PK IN MW PAD
89	1176553.09	2280753.52	445.54	PK IN MW PAD

PROPOSED TRANSMISSION LINE MINIMUM DESIGN SAG HEIGHT

GASTON - FAYETTEVILLE 230 kV & GASTON - GOAT ROCK #2 23OkV
STR. 3A - 4: ELEV. 503.44 FT.
STR. 4 - 5: ELEV. 503.14 FT.
STR. 5 - 6: ELEV. 472.36 FT.

GASTON - GOAT ROCK #1 230 kV & GASTON - YELLOW DIRT (CTC) 230kV
STR. 3 - 3A: ELEV. 505.49 FT.
STR. 3A - 5: ELEV. 499.81 FT.
STR. 5 - 6: ELEV. 470.76 FT.

N

ALABAMA NAD83 WEST US SURVEY FEET
200 0 200 400 FT

wood.
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ALABAMA LICENSED PROFESSIONAL ENGINEER No. 29587 GILBERT M. HAINES
05/29/19

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Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No: 6166-18-0770

REVISIONS			
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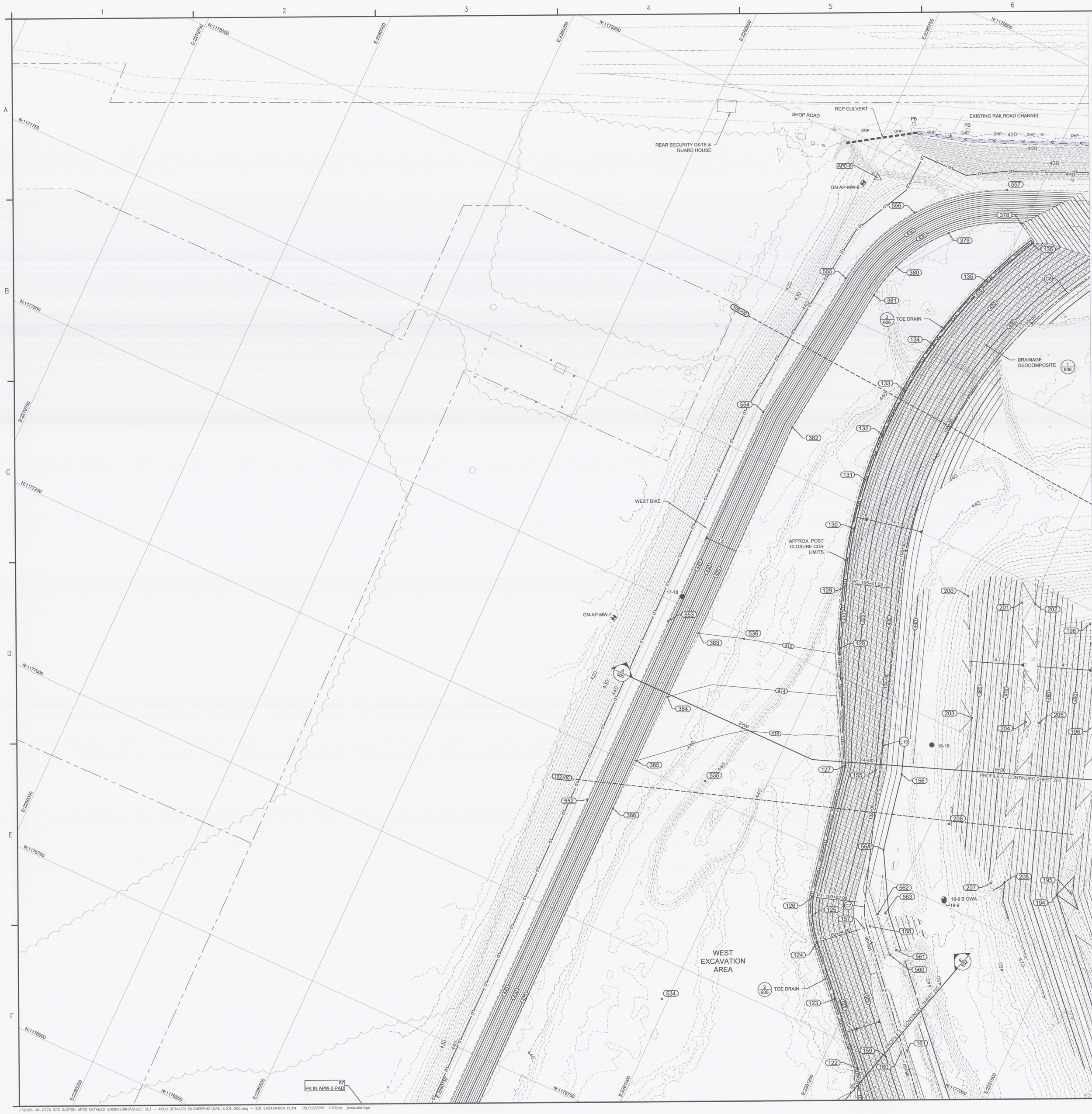
DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

OVERALL EXCAVATION PLAN

SHEET NUMBER:	REV. #
GAS_3.2.4_200	0



KEY MAP

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER GILBERT M. HAINES No. 25597
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

EXCAVATION PLAN

SHEET NUMBER:	REV. #
GAS_3.2.4_201	0

ALABAMA NAD83 WEST US SURVEY FEET
50 0 50 100 FT

J:\6166-18-0770 SCS GASTON APCD DETAILED ENGINEERING\SHEET SET - APCD DETAILED ENGINEERING\GAS_3.2.4_200.dwg - 201 EXCAVATION PLAN 05/29/2019 1:57pm jesse.aldridge

KEY MAP

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 25987 GILBERT M. HAINES
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

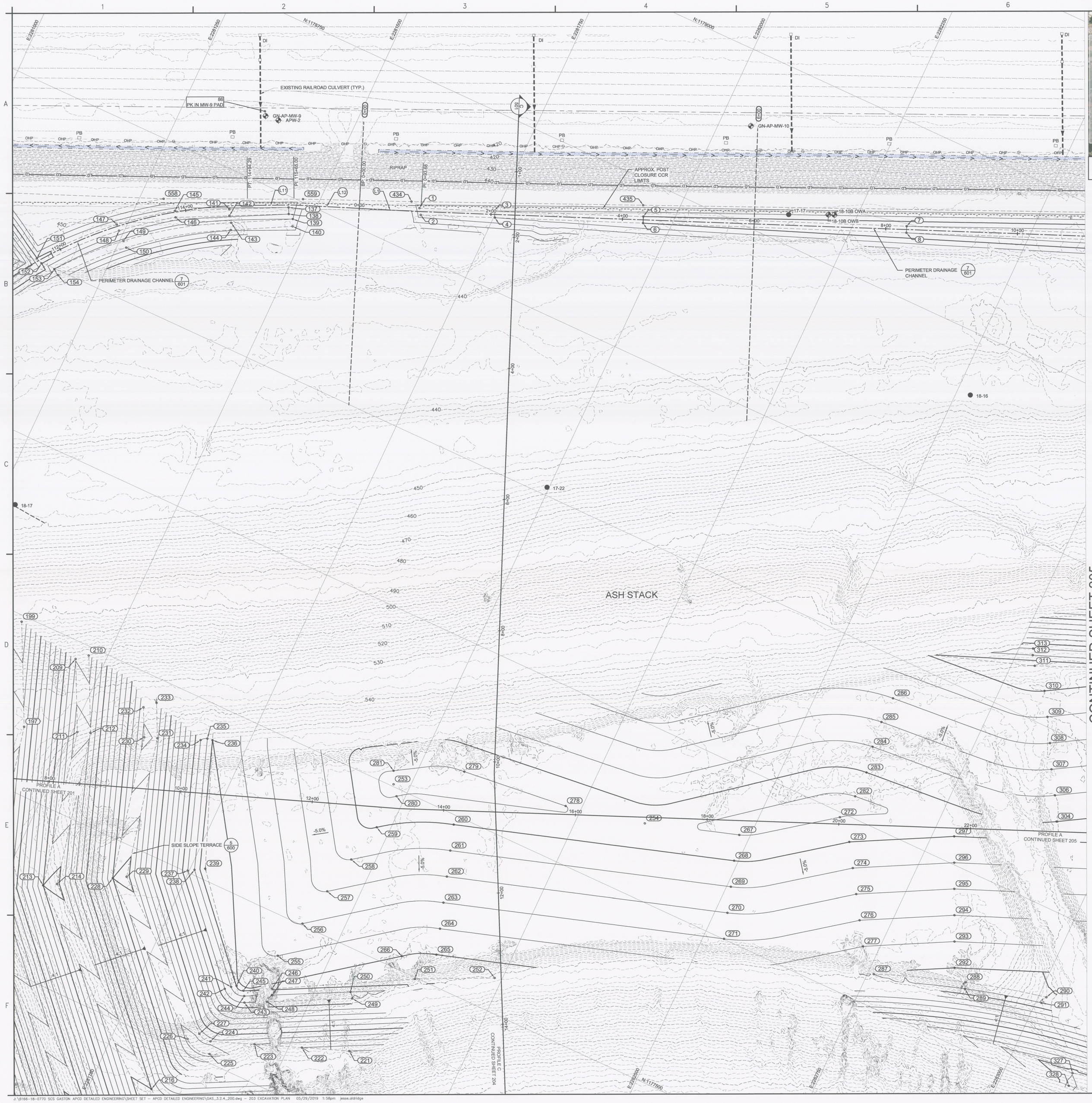
SHEET TITLE:

EXCAVATION PLAN

SHEET NUMBER:	REV. #
GAS_3.2.4_202	0

ALABAMA NAD83 WEST US SURVEY FEET
50 0 50 100 FT

J:\6166-18-0770 SCS GASTON APCD DETAILED ENGINEERING\SHEET SET - APCD DETAILED ENGINEERING\GAS_3.2.4_200.dwg - 202 EXCAVATION PLAN 05/29/2019 1:58pm jesse.aldridge



KEY MAP

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 25997 GILBERT M. HAINES

05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

EXCAVATION PLAN

SHEET NUMBER:	REV. #
GAS_3.2.4_203	0

ALABAMA NAD83 WEST US SURVEY FEET

50 0 50 100 FT

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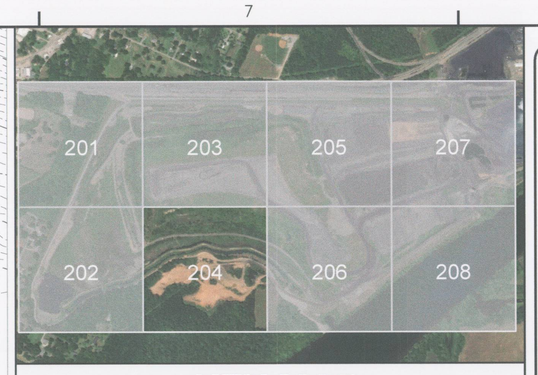


KEY MAP

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

STATE OF ALABAMA LICENSED PROFESSIONAL ENGINEER No. 25987 GILBERT M. HAINES
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

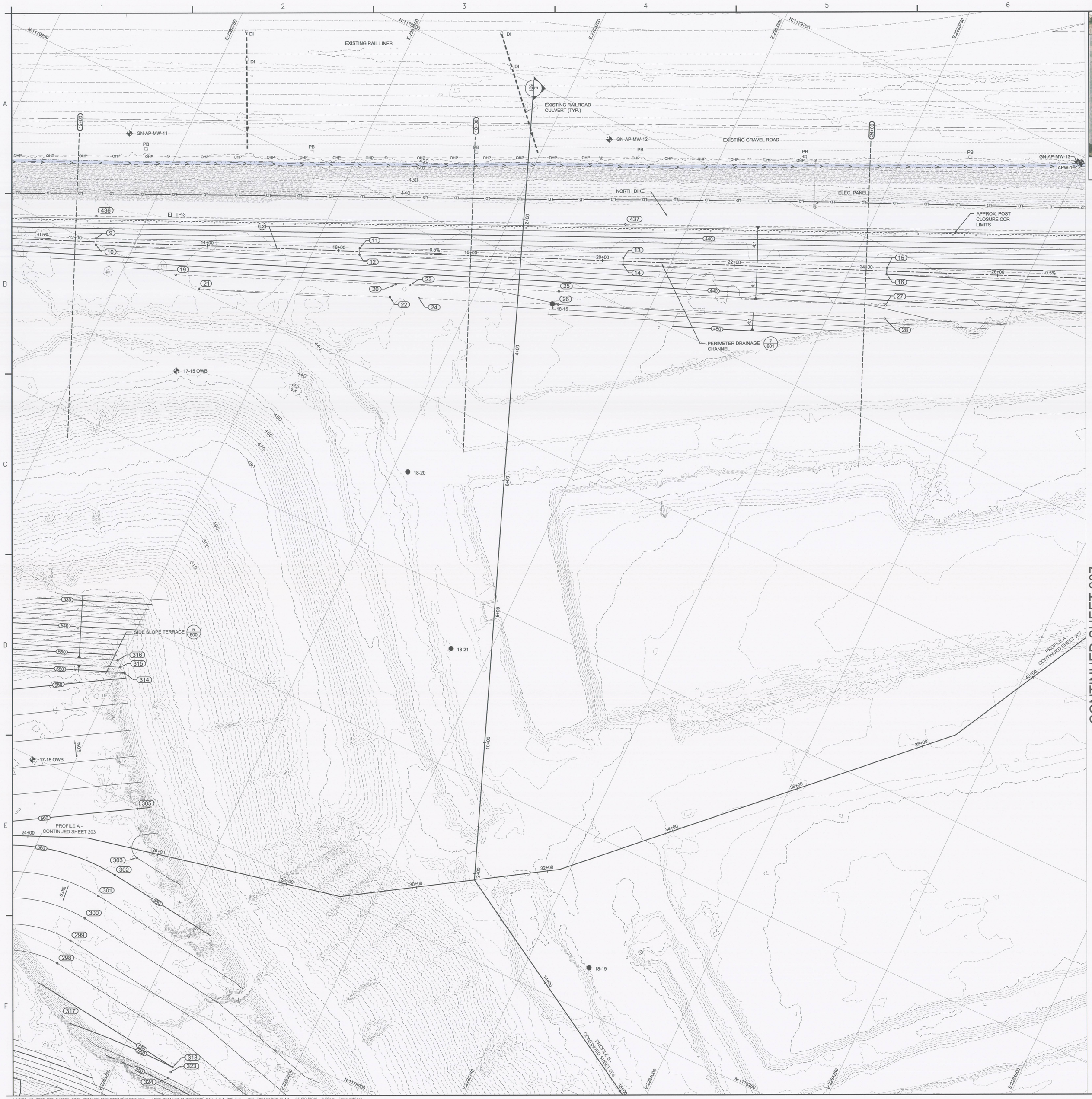
SHEET TITLE:

EXCAVATION PLAN

SHEET NUMBER:	REV. #
GAS_3.2.4_204	0

ALABAMA NAD83 WEST US SURVEY FEET
50 0 50 100 FT

J:\6166-18-0770 SCS GASTON APCD DETAILED ENGINEERING\SHEET SET - APCD DETAILED ENGINEERING\GAS_3.2.4_200.dwg - 204 EXCAVATION PLAN 05/29/2019 1:58pm jesse.aldridge



KEY MAP

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 25987 GILBERT M. HAINES
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

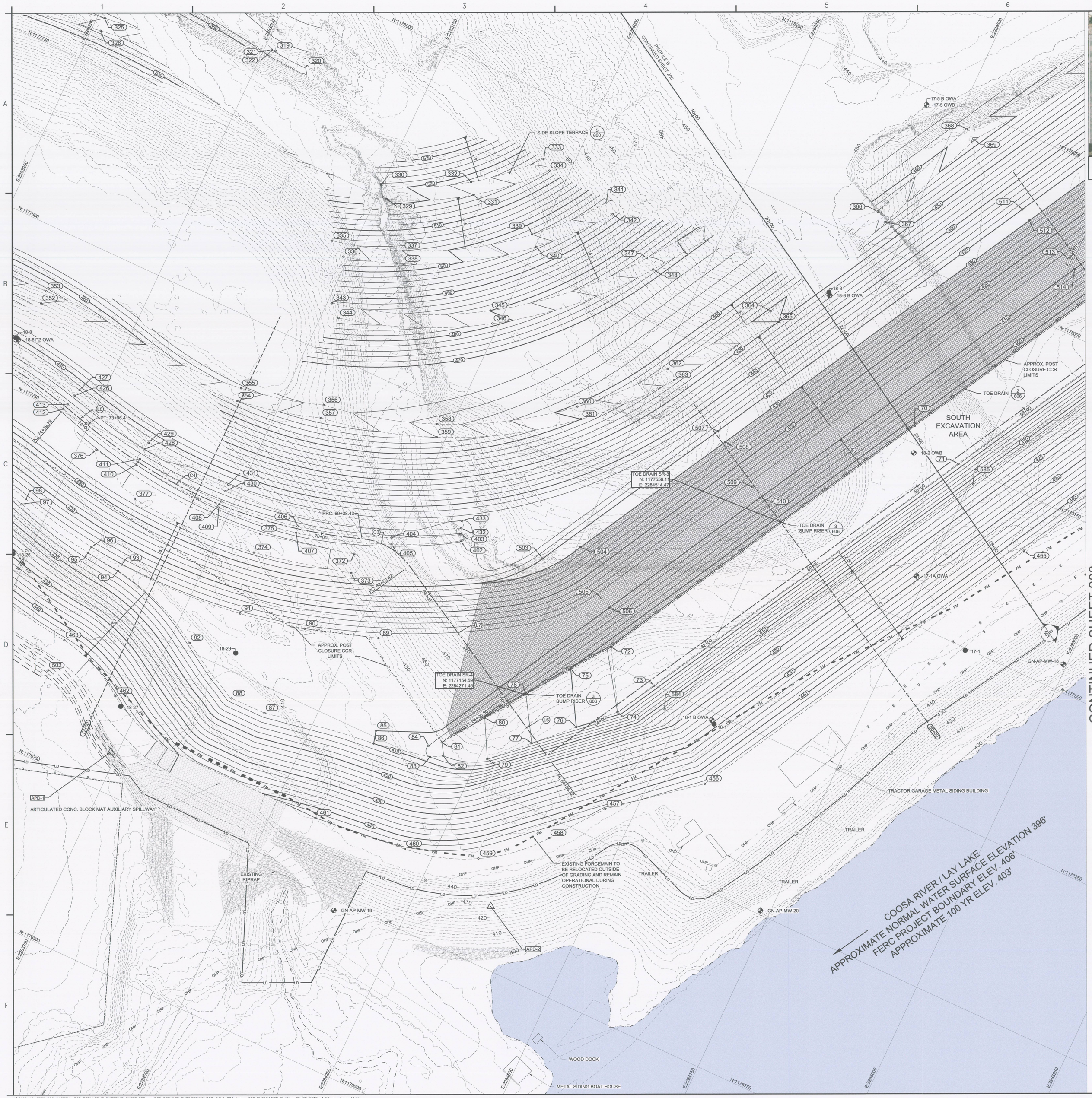
SHEET TITLE:

EXCAVATION PLAN

SHEET NUMBER:	REV. #
GAS_3.2.4_205	0

ALABAMA NAD83 WEST US SURVEY FEET
50 0 50 100 FT

J:\6166-18-0770 SCS GASTON APCD DETAILED ENGINEERING\SHEET SET - APCD DETAILED ENGINEERING\GAS_3.2.4_200.dwg - 205 EXCAVATION PLAN 05/29/2019 1:58pm jesse.aldridge



KEY MAP

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 29997 GILBERT M. HAINES
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

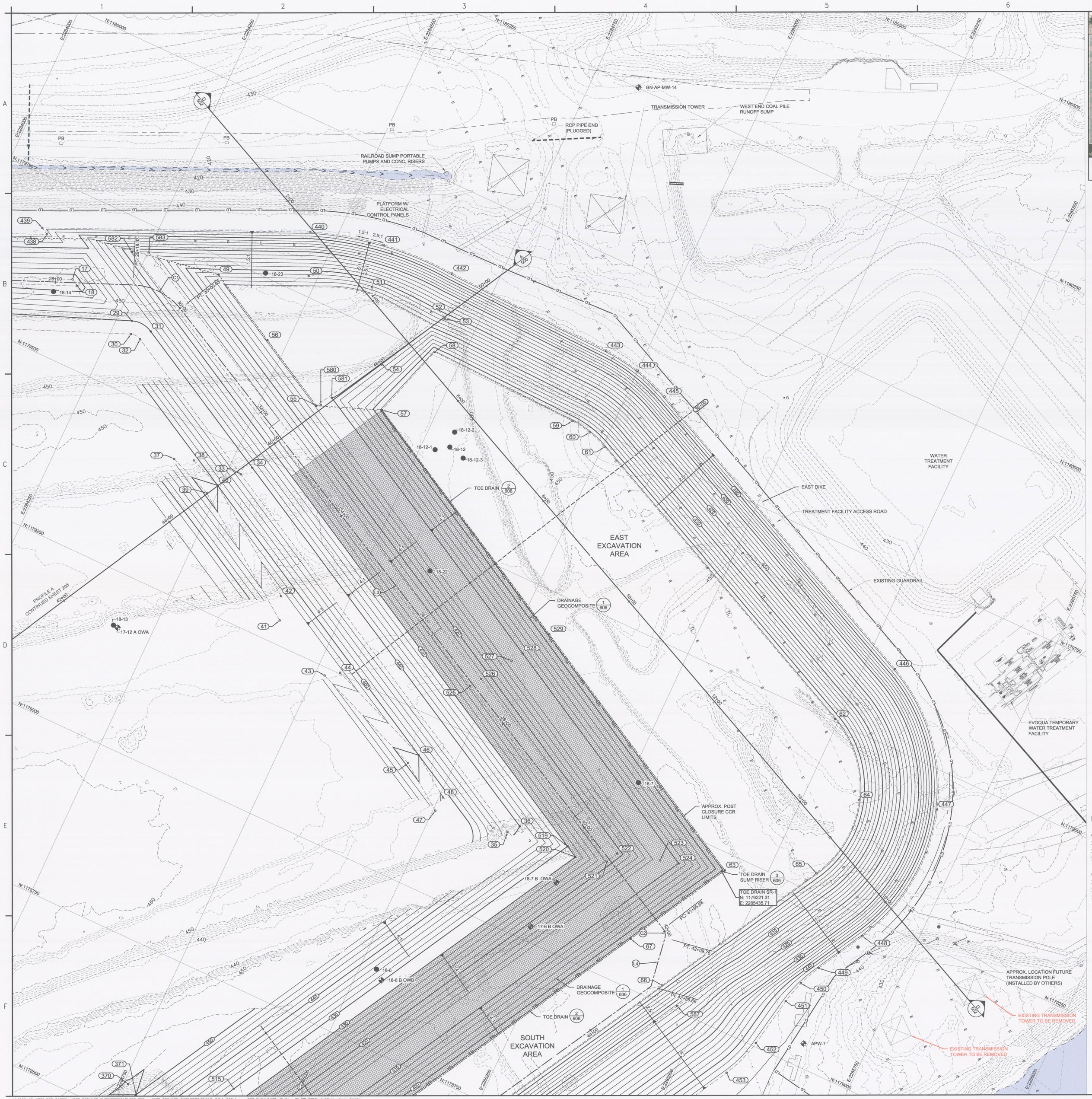
SHEET TITLE:

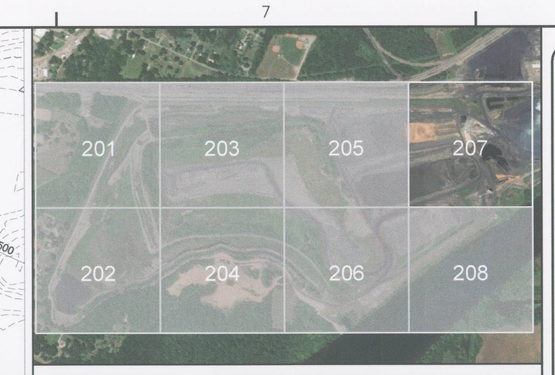
EXCAVATION PLAN

SHEET NUMBER:	REV. #
GAS_3.2.4_206	0

ALABAMA NAD83 WEST US SURVEY FEET
50 0 50 100 FT

J:\6166-18-0770 SCS GASTON APCD DETAILED ENGINEERING\SHEET SET - APCD DETAILED ENGINEERING\GAS_3.2.4_200.dwg - 206 EXCAVATION PLAN 05/29/2019 1:59pm jesse.aldridge





KEY MAP

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 29987 GILBERT M. HAINES
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No: 6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

EXCAVATION PLAN

SHEET NUMBER:	REV. #
GAS_3.2.4_207	0

PROPOSED TRANSMISSION LINE MINIMUM DESIGN SAG HEIGHT

GASTON - FAYETTEVILLE 230 kV & GASTON - GOAT ROCK #2 230kV
STR. 3A - 4: ELEV. 503.44 FT.
STR. 4 - 5: ELEV. 503.14 FT.
STR. 5 - 6: ELEV. 472.36 FT.

GASTON - GOAT ROCK #1 230 kV & GASTON - YELLOW DIRT (CTC) 230kV
STR. 3 - 3A: ELEV. 505.49 FT.
STR. 3A - 5: ELEV. 499.81 FT.
STR. 5 - 6: ELEV. 470.76 FT.

NOTES:

1. NEW TRANSMISSION TOWERS AND LINES TO BE COMPLETED BY OTHERS.

N

ALABAMA NAD83 WEST US SURVEY FEET
50 0 50 100 FT

J:\6166-18-0770 SCS GASTON APCD DETAILED ENGINEERING\SHEET SET - APCD DETAILED ENGINEERING\GAS_3.2.4_200.dwg - 207 EXCAVATION PLAN 05/29/2019 1:59pm jesse.aldridge

SOUTH EXCAVATION AREA

TOE DRAIN SR-2
N: 1178431.13
E: 2284998.56

TOE DRAIN SUMP RISER 3/606

DRAINAGE GEOCOMPOSITE 1/606

APPROX. POST CLOSURE CCR LIMITS

TOE DRAIN 2/606

18-5 A OWA

18-5

TP-6

18-4 OWB

GN-AP-MW-16

17-2

GN-AP-MW-17

APW-6

84
PK IN APW-6 PAD

COOSA RIVER / LAY LAKE
APPROXIMATE NORMAL WATER SURFACE ELEVATION 396'
FERC PROJECT BOUNDARY ELEV. 406'
APPROXIMATE 100 YR ELEV. 403'

GASTON-FAYETTEVILLE 230 KV

GASTON-GOAT ROCK #2 230 KV

GASTON-GOAT ROCK #1 230 KV

N:1178000

N:1177750

N:1177500

N:1177250

N:1177000

N:1176750

E:2285500

E:2285750

E:2286000

E:2286250

E:2286500

E:2286750

KEY MAP

ALABAMA NAD83 WEST US SURVEY FEET

50 0 50 100 FT

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED No. 25987 PROFESSIONAL ENGINEER GILBERT M. HAINES

05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

EXCAVATION PLAN

SHEET NUMBER:	REV. #
GAS_3.2.4_208	0

J:\6166-18-0770 SCS GASTON APCD DETAILED ENGINEERING\SHEET SET - APCD DETAILED ENGINEERING\GAS_3.2.4_200.dwg - 208 EXCAVATION PLAN 05/29/2019 1:59pm jesse.aldridge

PERIMETER BASE ALIGNMENT LINE TABLE

LINE #	LENGTH	DIRECTION	START POINT	END POINT	START STATION	END STATION
L1	93.685	N68° 06' 19.53"E	N:1178527.68, E:2281559.36	N:1178562.610, E:2281646.28	0+00.0	0+93.7
L2	2824.644	N67° 14' 39.47"E	N:1178562.61, E:2281646.28	N:1179655.190, E:2284251.06	0+93.7	29+18.3
L3	1194.998	S62° 42' 03.14"E	N:1179652.35, E:2284330.82	N:1179104.280, E:2285392.72	30+00.7	41+95.7
L4	76.927	S08° 54' 39.27"E	N:1179093.27, E:2285400.66	N:1179017.276, E:2285412.58	42+09.8	42+86.7
L5	2209.627	S28° 57' 47.51"W	N:1179017.28, E:2285412.58	N:1177084.005, E:2284342.57	42+86.7	64+96.3
L6	104.489	N60° 38' 06.77"W	N:1177084.00, E:2284342.57	N:1177135.243, E:2284251.51	64+96.3	66+00.8
L7	251.814	N60° 38' 06.77"W	N:1177135.24, E:2284251.51	N:1177258.724, E:2284032.05	66+00.8	68+52.6
L8	43.379	N75° 09' 16.01"W	N:1177247.93, E:2283498.62	N:1177259.046, E:2283456.69	73+96.4	74+39.8
L13	259.854	S63° 45' 59.82"W	N:1177195.36, E:2282915.93	N:1177080.502, E:2282682.84	79+97.2	82+57.1
L14	794.283	S61° 49' 25.08"W	N:1177080.50, E:2282682.84	N:1176705.451, E:2281982.68	82+57.1	90+51.4
L9	518.307	N41° 07' 03.27"W	N:1176781.20, E:2281568.07	N:1177171.668, E:2281227.23	95+06.4	100+24.7
L10	478.947	N18° 11' 39.79"W	N:1177203.96, E:2281208.82	N:1177658.963, E:2281059.27	100+62.1	105+41.0
L11	70.713	N64° 40' 40.08"E	N:1178460.48, E:2281403.50	N:1178490.725, E:2281467.41	114+94.3	115+65.0
L12	99.089	N68° 06' 19.53"E	N:1178490.72, E:2281467.41	N:1178527.675, E:2281559.36	115+65.0	116+64.1

PERIMETER BASE ALIGNMENT CURVE TABLE

CURVE #	RADIUS	LENGTH	CHORD DIRECTION	START POINT	END POINT	START STATION	END STATION
C1	95.148	82.354	S87° 57' 36.49"E	N:1179655.19, E:2284330.82	N:1179652.35, E:2284330.82	29+18.3	30+00.7
C2	15.000	14.082	S35° 48' 21.37"E	N:1179104.28, E:2285400.66	N:1179093.27, E:2285400.66	41+95.7	42+09.8
C3	100.000	85.811	N85° 13' 05.94"W	N:1177258.72, E:2283949.14	N:1177265.66, E:2283949.14	68+52.6	69+38.4
C4	747.932	457.985	S87° 44' 47.49"W	N:1177265.66, E:2283498.62	N:1177247.93, E:2283498.62	69+38.4	73+96.4
C5	744.539	557.427	S83° 17' 01.07"W	N:1177259.05, E:2282915.93	N:1177195.36, E:2282915.93	74+39.8	79+97.2
C6	338.306	454.998	N79° 38' 49.10"W	N:1176705.45, E:2281568.07	N:1176781.20, E:2281568.07	90+51.4	95+06.4
C7	93.343	37.422	N29° 40' 54.40"W	N:1177171.67, E:2281208.82	N:1177203.96, E:2281208.82	100+24.7	100+62.1
C8	659.056	953.254	N23° 14' 30.14"E	N:1177658.96, E:2281403.50	N:1178460.48, E:2281403.50	105+41.0	114+94.3

NOTES:

1. WORK POINTS ARE PROVIDED FOR CONVENIENCE AND DESIGN REFERENCE ONLY FOR CERTAIN CONSTRUCTION ELEMENTS AND BREAKS IN GRADE AND DO NOT REPRESENT A COMPREHENSIVE POINT LIST FOR CONSTRUCTION STAKING.
2. THE CONTRACTOR MAY USE THESE WORK POINTS, AUTOCAD CIVIL 3D DATA, DESIGN DRAWINGS AND DETAILS AND SPECIFICATIONS FOR CONSTRUCTION OF THE ASH POND CLOSURE.
3. CONTRACTOR SHALL NOTIFY THE OWNER AND DESIGN ENGINEER AS SOON AS POSSIBLE WITH ANY DISCREPANCIES FOUND IN THE CONSTRUCTION DOCUMENTS COMPARED WITH FIELD CONDITIONS.

WORK POINT TABLE (EXCAVATION)

POINT #	NORTHING	EASTING	DESIGN ELEV.
1	1178566.3	2281642.2	443.00
2	1178558.0	2281648.2	443.00
3	1178610.2	2281746.7	442.00
4	1178601.6	2281752.1	442.00
5	1178697.9	2281955.9	440.00
6	1178688.7	2281959.7	440.00
7	1178852.6	2282324.7	438.00
8	1178843.4	2282328.6	438.00
9	1179007.3	2282693.6	436.00
10	1178998.1	2282697.5	436.00
11	1179162.1	2283062.5	434.00
12	1179152.8	2283066.4	434.00
13	1179316.8	2283431.4	432.00
14	1179307.6	2283435.2	432.00
15	1179471.5	2283800.2	430.00
16	1179462.3	2283804.1	430.00
17	1179624.1	2284164.0	428.03
18	1179617.8	2284175.1	428.00
19	1179007.8	2282826.5	445.62
20	1179135.1	2283135.3	444.47
21	1179003.1	2282867.6	445.89
22	1179113.5	2283135.4	444.90
23	1179143.2	2283154.8	444.39
24	1179130.4	2283176.3	444.74
25	1179229.5	2283364.3	443.62
26	1179210.9	2283371.6	444.02
27	1179418.4	2283822.5	441.90
28	1179399.9	2283830.2	442.30
29	1179604.5	2284272.3	440.06
30	1179585.8	2284279.6	440.46
31	1179602.2	2284304.9	440.00
32	1179584.6	2284295.4	440.40
33	1179462.2	2284520.7	440.40
34	1179478.7	2284532.2	440.00
35	1179138.9	2285116.2	440.49
36	1179154.3	2285129.6	440.00
37	1179441.1	2284418.8	451.17
38	1179451.4	2284447.1	451.57
39	1179414.4	2284486.1	449.00
40	1179432.1	2284495.6	450.00
41	1179285.5	2284667.5	455.68
42	1179319.8	2284653.8	455.82
43	1179238.1	2284764.5	454.52
44	1179251.9	2284784.1	455.19
45	1179170.4	2284935.5	449.00
46	1179188.1	2284945.1	450.00
47	1179122.1	2285003.5	451.50
48	1179145.2	2285005.5	452.22
49	1179723.8	2284361.6	417.12
50	1179779.4	2284486.5	417.17
51	1179804.4	2284580.8	415.53
52	1179807.7	2284678.4	417.19
53	1179807.0	2284701.2	417.20
54	1179706.2	2284640.8	410.68
55	1179605.3	2284580.4	411.50
56	1179664.6	2284471.0	410.54
57	1179641.4	2284673.3	397.50
58	1179755.1	2284708.4	397.50
59	1179747.8	2284942.3	397.50
60	1179743.3	2284973.4	397.50
61	1179732.8	2285003.1	397.50
62	1179503.7	2285494.2	397.50
63	1179224.5	2285439.7	397.50
64	1179407.2	2285579.5	397.50
65	1179278.9	2285567.3	397.50
66	1179025.5	2285427.2	397.54
67	1179069.8	2285354.2	397.50
68	1178183.8	2284864.0	397.50
69	1178152.6	2284944.7	397.67
70	1177774.8	2284637.7	397.50
71	1177750.0	2284722.1	397.74
72	1177275.3	2284361.4	397.50
73	1177249.0	2284445.2	397.81
74	1177189.2	2284411.8	398.00
75	1177219.9	2284319.3	400.00
76	1177142.2	2284364.8	400.00
77	1177091.6	2284313.8	402.00
78	1177155.5	2284274.5	402.00
79	1177041.1	2284262.9	404.00
80	1177096.7	2284232.9	404.00
81	1177035.2	2284189.7	406.00
82	1177017.4	2284200.1	406.00
83	1177007.5	2284182.6	408.00
84	1177022.3	2284173.4	408.00
85	1177009.4	2284091.3	410.00
86	1176990.2	2284096.3	410.00
87	1176962.7	2283926.7	410.33
88	1176961.8	2283872.2	410.55
89	1177139.0	2284035.4	410.00
90	1177105.0	2283928.0	410.76
91	1177084.6	2283829.4	411.11
92	1177011.8	2283779.0	411.07
93	1177076.8	2283635.4	411.83
94	1177065.6	2283634.0	411.80
95	1177071.5	2283581.3	412.00
96	1177081.4	2283582.6	412.00
97	1177096.0	2283458.2	412.62
98	1177105.7	2283460.9	412.62
99	1177116.4	2283219.0	413.86
100	1177126.4	2283218.0	413.86

WORK POINT TABLE (EXCAVATION)

POINT #	NORTHING	EASTING	DESIGN ELEV.
101	1177051.5	2282987.8	415.09
102	1177060.5	2282983.4	415.09
103	1176981.2	2282820.6	416.00
104	1176972.7	2282825.9	415.99
105	1176797.5	2282466.3	418.00
106	1176806.0	2282461.0	418.00
107	1176621.9	2282105.8	420.00
108	1176630.9	2282101.4	420.00
109	1176598.9	2282035.8	420.37
110	1176589.9	2282040.2	420.37
111	1176565.0	2281979.1	420.68
112	1176573.9	2281974.0	420.69
113	1176436.3	2282091.3	424.00
114	1176809.0	2281927.5	418.00
115	1176588.5	2281867.9	414.00
116	1176572.7	2281783.3	410.00
117	1176614.0	2281622.2	408.00
118	1176687.0	2281518.0	407.08
119	1176785.8	2281432.2	408.00
120	1176855.0	2281379.3	410.00
121	1176903.3	2281346.2	412.00
122	1176971.5	2281303.2	415.50
123	1177053.3	2281228.8	415.49
124	1177120.1	2281168.1	415.48
125	1177153.3	2281144.8	415.47
126	1177179.1	2281134.0	415.47
127	1177381.1	2281095.5	415.50
128	1177540.4	2281015.3	409.77
129	1177630.1	2280983.6	409.70
130	1177712.9	2280959.1	409.66
131	1177787.7	2280945.8	409.62
132	1177860.1	2280940.4	409.60
133	1177935.0	2280942.3	409.58
134	1178016.3	2280953.1	409.56
135	1178137.1	2280986.8	409.54
136	1178218.9	2281023.2	409.52
137	1178483.9	2281461.5	442.00
138	1178475.0	2281465.9	442.00
139	1178470.7	2281474.9	444.00
140	1178460.4	2281479.1	444.59
141	1178443.6	2281380.9	441.46
142	1178434.6	2281385.3	441.46
143	1178426.1	2281392.2	445.52
144	1178415.9	2281396.3	445.74
145	1178406.6	2281307.1	440.96
146	1178398.0	2281312.2	440.98
147	1178350.6	2281235.8	440.52
148	1178343.4	2281242.8	440.54
149	1178332.3	2281255.5	444.68
150	1178324.8	2281263.6	444.91
151	1178252.7	2281147.4	439.89
152	1178248.8	2281157.0	439.90
153	1178249.0	2281178.5	444.10
154	1178243.0	2281187.7	444.33
155	1177393.8	2281140.0	430.00
156	1177404.4	2281178.7	440.00
157	1177168.4	2281223.5	434.35
158	1177175.0	2281231.0	434.35
159	1177005.1	2281334.8	430.00
160	1177020.1	2281352.9	433.37
161	1177026.8	2281360.3	433.38
162	1176810.1	2281460.3	420.00
163	1176835.1	2281489.2	430.00
164	1176810.3	2281536.0	432.00
165	1176816.9	2281543.5	432.00
166	1176754.4	2281585.9	431.52
167	1176761.5	2281592.9	431.52
168	1176716.0	2281547.3	420.00
169	1176743.2	2281574.4	430.00
170	1176699.7	2281982.6	433.31
171	1176708.5	2281977.8	433.31
172	1176659.9	2281949.4	430.00
173	1176787.0	2282144.9	434.23
174	1176795.6	2282139.9	434.23
175	1176810.0	2282130.6	438.40
176	1176819.8	2282125.7	438.62
177	1176856.4	2282093.8	450.00
178	1176891.1	2282073.7	460.00
179	1176920.5	2282095.8	458.00
180	1176845.0	2281948.6	464.00
181	1176863.7	2281941.7	463.00
182	1176821.0	2281846.8	467.09
183	1176841.2	2281842.2	466.44
184	1176924.9	2281866.5	485.10
185	1176943.6	2281859.6	484.10
186	1176983.5	2281967.8	480.63
187	1176964.6	2281974.2	481.66
188	1177029.3	2281853.3	503.76
189	1177048.0	2281846.3	502.75
190	1177085.2	2281946.5	500.12
191	1177066.7	2281954.4	500.58
192	1177036.5	2281813.2	503.74
193	1177051.6	2281826.3	502.74
194	1177335.4	2281467.4	490.00
195	1177346.2	2281485.5	489.20
196	1177590.2	2281411.3	497.85
197	1177596.9	2281430.3	496.85
198	1177730.4	2281342.3	493.16
199	1177740.7	2281359.5	492.11
200	1177692.3	2281157.5	452.52

WORK POINT TABLE (EXCAVATION)

POINT #	NORTHING	EASTING	DESIGN ELEV.
201	1177717.1	2281235.8	472.98
202	1177723.0	2281255.2	472.00
203	1177526.4	2281239.2	458.00
204	1177554.5	2281315.9	478.41
205	1177561.1	2281334.9	477.41
206	1177365.6	2281274.7	453.33
207	1177310.2	2281369.7	470.90
208	1177320.2	2281388.0	470.00
209	1177723.7	2281457.9	513.91
210	1177736.7	2281473.8	512.72
211	1177623.9	2281507.1	517.25
212	1177630.5	2281526.1	516.25
213	1177389.7	2281558.5	510.00
214	1177400.5	2281576.6	509.00
215	1177153.8	2281835.0	521.51
216	1177177.1	2281838.1	520.00
217	1177147.1	2281874.4	521.64
218	1177165.8	2281867.4	520.84
219	1177196.3	2281949.6	518.00
220	1177165.6	2281924.4	520.07
221	1177356.2	2282086.2	532.00
222	1177330.6	2282018.7	534.00
223	1177305.0	2281951.2	536.00
224	1177280.8	2281888.9	537.70
225	1177262.7	2281895.7	538.91
226	1177269.5	2281855.7	538.79
227	1177284.3	2281868.6	537.63
228	1177444.1	2281649.7	530.00
229	1177454.9	2281667.8	529.00
230	1177659.4	2281602.2	536.62
231	1177666.1	2281621.2	535.62
232	1177700.2	2281582.1	535.25
233	1177714.6	2281597.3	534.00
234	1177691.3	2281681.9	552.00
235	1177697.6	2281690.2	552.00
236	1177698.7	2281698.3	550.00
237	1177502.6	2281748.0	552.00
238	1177507.9	2281756.7	552.00
239	1177516.2	2281770.8	548.00
240	1177374.5	2281889.1	549.91
241	1177369.5	2281882.3	552.00
242	1177362.8	2281874.9	552.00
243	1177356.3	2281910.8	552.00
244	1177365.2	2281906.2	552.00
245	1177372.1	2281901.6	549.94
246	1177393.1	2281939.8	549.62
247	1177384.4	2281943.8	552.00
248	1177371.9	2281941.2	551.57
249	1177430.9	2282056.5	552.00
250	1177438.7	2282049.9	552.00
251	1177497.8	2282130.1	548.00
252	1177550.1	2282239.2	548.80
253	1177753.4	2281975.9	562.76
254	1177859.7	2282347.0	560.00
255	1177442.4	2281926.6	552.00
256	1177502.6	2281940.0	554.00
257	1177562.8	2281953.5	556.00
258	1177622.3	2281966.0	558.00
259	1177683.2	2281980.3	560.00
260	1177736.0	2282084.5	560.00
261	1177697.8	2282096.5	558.00
262	1177659.7	2282108.5	556.00
263	1177621.5	2282120.6	554.00
264	1177583.4	2282132.6	552.00
265	1177545.1	2282144.1	550.00
266	1177521.0	2282097.4	550.00
267	1177904.1	2282484.4	562.00
268	1177865.1	2282493.9	560.00
269	1177827.0	2282506.0	558.00
270	1177788.8	2282518.0	556.00
271	1177750.7	2282530.0	554.00
272	1177992.8	2282611.4	562.00
273	1177964.6	2282640.5	560.00
274	1177930.7	2282661.9	558.00
275	1177896.8	2282683.4	556.00
276	1177862.9	2282704.8	554.00
277	1177829.0	2282726.3	552.00
278	1177833.2	2282226.7	562.00
279	1177816.0	2282065.2	562.00
280	1177738.8	2281987.6	562.00
281	1177772.1	2281967.1	562.00
282	1178031.4	2282619.2	562.00
283	1178071.7	2282619.5	560.00
284	1178111.1	2282611.5	558.00
285	1178150.9	2282607.7	556.00
286	1178191.2	2282608.3	554.00
287	1177797.5	2282758.9	552.00
288	1177845.1	2282890.7	552.00
289	1177835.5	2282893.8	552.00
290	1177875.7	2283011.3	552.00
291	1177864.9	2283008.3	552.00
292	1177857.9	2282866.1	550.00
293	1177894.2	2282849.2	552.00
294	1177930.5	2282832.2	554.00
295	1177966.7	2282815.2	556.00
296	1178003.0	2282798.2	558.00
297	1178039.3	2282781.3	560.00
298	1177980.9	2283105.3	552.00
299	1178020.8	2283108.6	554.00
300	1178060.4	2283114.2	556.00

WORK POINT TABLE (EXCAVATION)

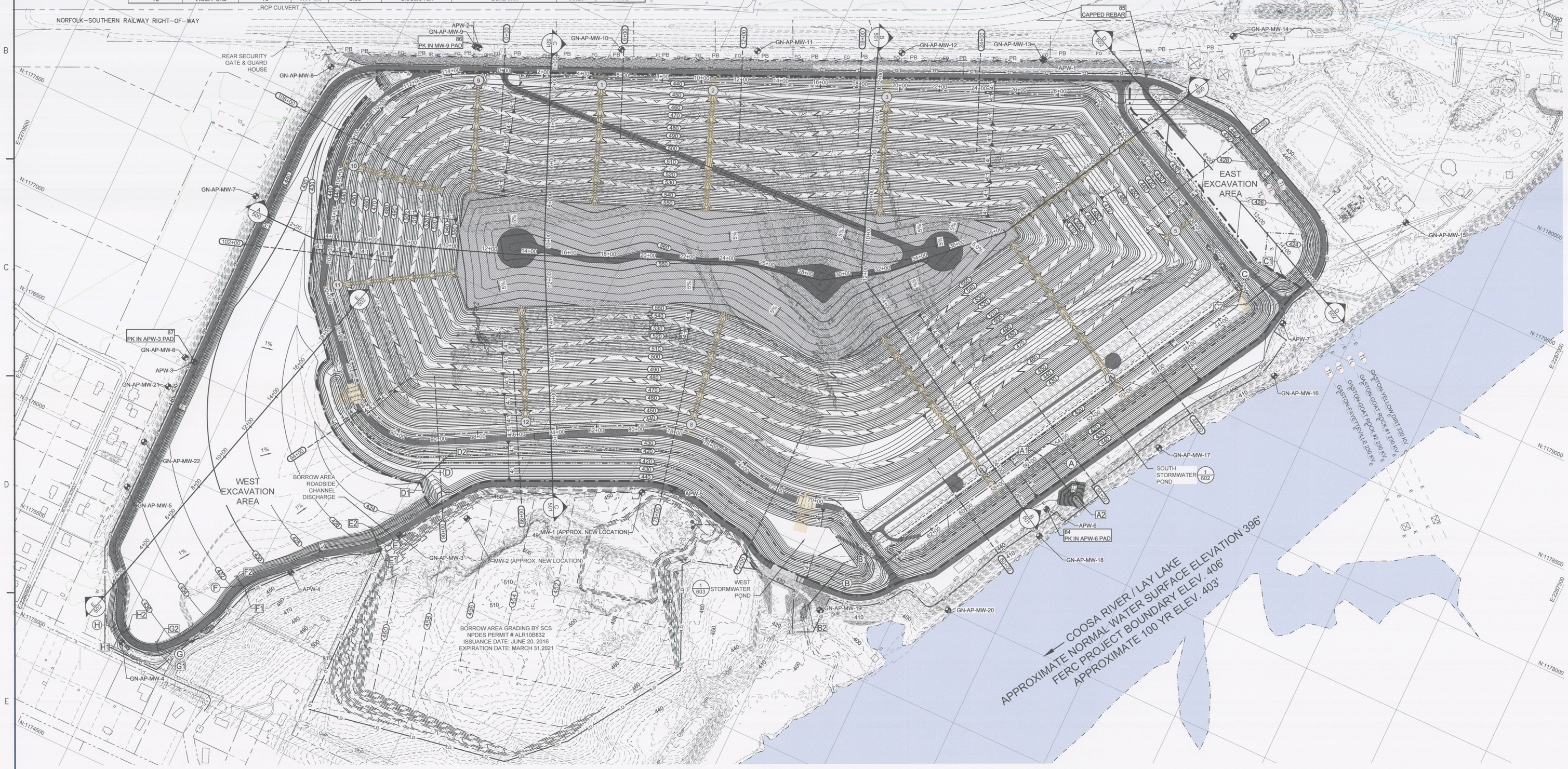
POINT #	NORTHING	EASTING	DESIGN ELEV.
301	1178100.2	2283118.3	558.00
302	1178139.4	2283127.8	560.00
303	1178177.4	2283146.6	562.00
304	1178125.3	2282912.9	560.00
305	1178245.6	2283116.1	560.00
306	1178160.5	2282893.8	558.00
307	1178194.2	2282872.3	556.00
308	1178229.3	2282853.1	554.00
309	1178264.2	2282833.0	552.00
310	1178298.2	2282812.3	550.00
311	1178326.6	2282782.7	548.00
312	1178340.1	2282773.1	552.00
313	1178349.4	2282769.5	552.00
314	1178424.4	2283012.2	549.78
315	1178430.3	2283002.0	552.00
316	1178438.0	2282993.7	552.00
317	1177910.4	2283145.3	548.51
318	1177910.7	2283330.5	550.00
319	1177885.8	2283517.0	551.52
320	1177884.6	2283570.6	551.09
321	1177884.8	2283510.9	552.00
322	1177875.2	2283508.0	552.00
323	1177902.9	2283331.0	552.00
324	1177892.9	2283331.6	552.00
325	1177821.4	2283261.2	534.00
326	1177801.6	2283263.7	535.05
327	1177787.4	2283096.2	528.11
328	1177767.4	2283099.1	527.10
329	1177751.2	2283765.2	522.01
330	1177766.7	2283748.4	521.27
331	1177812.4	2283882.2	518.01
332	1177828.7	2283870.5	517.01
333	1177907.0	2283955.7	513.35
334	1177894.4	2283971.2	514.34
335	1177658.9	2283717.1	504.93
336	1177644.1	2283742.9	505.18
337	1177690.5	2283821.5	502.00
338	1177672.6	2283830.4	502.57
339	1177795.3	2283988.2	496.00
340	1177780.8	2284001.9	496.78
341	1177886.4	2284069.9	492.19
342	1177874.7	2284086.1	493.19
343	1177572.5	2283756.9	487.36
344	1177556.1	2283775.5	487.99
345	1177663.6	2283980.0	479.94
346	1177646.8	2283990.9	480.94
347	1177835.9	2284161.1	472.17
348	1177824.2	2284177.3	473.17
349	1177333.9	2282922.3	456.00
350	1177375.6	2283156.9	448.11
351	1177355.6	2283159.8	447.10
352	1177386.3	2283356.7	456.00
353	1177406.3	2283356.0	455.00
354	1177376.8	2283688.9	466.00
355	1177396.7	2283686.3	465.00
356	1177426.2	2283811.1	468.91
357	1177406.7	2283815.8	469.91
358	1177472.4	2283979.6	465.00
359	1177454.0	2283987.4	466.00
360	1177586.1	2284160.9	459.00
361	1177571.1	2284174.1	460.00
362	1177696.2	2284261.0	454.45
363	1177684.5	2284277.2	455.45
364	1177841.4	2284365.9	449.00
365	1177831.7	2284383.5	450.00
366	1178047.5	2284449.4	455.67
367	1178037.9	2284467.1	456.68
368	1178218.4	2284518.6	461.20
369	1178208.7	2284536.3	462.20
370	1178548.1	2284756.8	449.00
371	1178538.4	2284774.5	450.00
372	1177240.1	2283948.2	433.71
373	1177211.4	2283956.4	433.71
374	1177177.8	2283809.3	434.89
375	1177207.6	2283805.9	434.89
376	1177219.5	2283526.7	436.33
377	1177175.4	2283611.5	435.87
378	1178239.5	2280994.9	411.50
379	1178180.3	2280902.3	411.50
380	1178100.5	2280851.7	411.50
381	1178048.0	2280838.8	411.50
382	1177814.6	2280810.2	411.50
383	1177471.7	2280811.0	412.00
384	1177364.2	2280808.5	414.00
385	1177256.8	2280806.0	416.00
386	1177176.2	2280804.1	417.50
387	1176626.2	2280806.6	417.50
388	1175555.0	2280811.4	417.50
389	1175533.8	2280815.1	417.50
390	1175515.3	2280826.2	417.50
391	1175419.9	2280909.5	417.50
392	1175388.6	2280933.6	417.50
393	1175354.5	2280953.5	417.50
394	1175304.3	2280971.7	417.50
395	1175207.2	2281000.7	417.50
396	1175159.8	2281038.0	417.50
397	1175143.7	2281088.1	417.50
398	1175170.5	2281183.7	417.50
399	1175249.3	2281259.4	417.50
400	1175302.9	2281289.2	417.50

WORK POINT TABLE (EXCAVATION)

POINT #	NORTHING	EASTING	DESIGN ELEV.
401	1175336.0	2281280.8	417.50
402	1177325.9	2284086.9	431.68
403	1177334.3	2284081.5	431.68
404	1177286.3	2283989.4	431.21
405	1177277.1	2283993.5	431.21
406	1177241.7	2283852.9	430.63
407	1177231.9	2283855.0	430.63
408	1177227.3	2283731.8	431.26
409	1177217.3	2283732.2	431.26
410	1177224.2	2283591.3	432.00
411	1177234.1	2283592.7	432.00
412	1177254.2	2283455.4	432.75
413	1177263.9	2283458.0	432.75
414	1177278.1	2283248.0	434.00
415	1177288.1	2283247.8	434.00
416	1177190.9	2282918.2	436.00
417	1177199.8	2282913.6	436.00
418	1177130.3	2282795.3	436.53
419	1177139.0	2282790.2	436.53
420	1177153.8	2282781.8	440.71
421	1177163.8	2282777.2	440.93
422	1177214.9	2282905.9	440.18
423	1177224.7	2282900.8	440.40
424	1177299.1	2283168.2	437.41
425	1177309.9	2283166.5	437.96
426	1177280.3	2283462.3	436.93
427	1177291.0	2283465.1	437.15
428	1177251.1	2283593.6	436.19
429	1177262.2	2283594.1	436.41
430	1177244.3	2283731.1	435.44
431	1177255.3	2283730.7	435.66
432	1177343.8	2284079.2	433.33
433	1177354.1	2284075.1	433.67
434	1178570.5	2281627.2	445.00
435	1178713.4	2281948.4	445.00
436	1179038.5	2282679.7	445.00
437	1179364.4	2283412.7	445.00
438	1179669.9	2284099.7	445.00
439	1179675.8	2284089.3	445.00
440	1179841.3	2284460.6	445.00
441	1179870.5	2284569.4	445.00
442	1179874.7	2284682.0	445.00
443	1179866.6	2284943.4	445.00
444	1179859.1	2284999.7	445.00
445	1179840.4	2285053.3	445.00
446	1179611.3	2285544.4	445.00
447	1179443.9	2285692.5	445.00
448	1179221.4	2285671.2	445.00
449	1179149.4	2285631.3	445.00
450	1179117.1	2285616.7	445.00
451	1179082.9	2285607.5	445.00
452	1179005.8	2285593.3	445.00
453	1178946.0	2285572.0	445.00
454	1178059.2	2285082.2	445.00
455	1177671.7	2284868.1	445.00
456	1177145.9	2284577.7	445.00
457	1177047.8	2284457.1	444.63
458	1176971.6	2284398.9	444.82
459	1176898.1	2284314.5	444.54
460	1176864.2	2284207.2	444.25
461	1176850.0	2284064.3	444.01
462	1176890.7	2283710.7	447.42
463	1176935.4	2283604.8	445.00
464	1176971.1	2283424.0	445.00
465	1176992.7	2283229.5	445.00
466	1176943.8	2283039.9	445.00
467	1176868.3	2282876.7	445.00
468	1176698.8	2282510.3	445.00
469	1176643.2	2282390.0	445.00
470	1176604.3	2282328.0	445.00
471	1176551.1	2282277.6	445.00
472	1176388.3	2282161.0	445.00
473	1176255.7	2282073.0	446.00
474	1176147.7	2282002.1	447.01
475	1176082.2	2281947.4	446.00
476	1176036.9	2281892.3	445.16
477	1175947.9	2281763.0	440.00
478	1175804.8	2281625.9	440.00
479	1175661.3	2281498.3	440.00
480	1175557.4	2281441.8	440.00
481	1175458.3	2281410.6

STORM DRAINAGE PIPES (25 YEAR STORM EVENT)															
PIPE NAME	SIZE	LENGTH	Slope	MATERIAL	INVERT UP	INVERT DOWN	HGL UP	HGL DOWN	FLOW (cfs)	EGL UP	EGL DOWN	VELOCITY (f/s)	LOCATION UP	LOCATION DOWN	STRUCTURE ID UP	STRUCTURE ID DOWN
A	30	247	0.51%	HDPE	409.60	408.35	415.16	410.53	56.310	418.62	413.99	14.94	N 1177913.15 / E 2284845.75	N 1177796.99 / E 2285064.24	A1	A2
B	30	280	0.41%	HDPE	409.50	408.35	414.89	410.53	56.910	418.43	414.07	15.10	N 1177003.51 / E 2284159.88	N 1176734.03 / E 2284085.49	B1	B2
C	36	230	1.00%	HDPE	418.40	416.10	420.44	418.33	46.000	421.63	419.52	8.78	N 1179258.00 / E 2285551.66	N 1179050.57 / E 2285452.11	C1	C2
D	24	157	0.27%	HDPE	420.88	420.47	423.73	422.11	19.570	424.79	423.17	8.28	N 1176476.57 / E 2282043.86	N 1176620.76 / E 2282105.73	D1	D2
E	24	98	17.07%	N-12 WT HDPE	442.50	425.70	442.97	426.21	1.670	442.98	426.23	1.04	N 1176087.20 / E 2281993.95	N 1176157.73 / E 2281925.36	E1	E2
F	30	71	8.11%	N-12 WT HDPE	437.27	431.51	438.84	433.42	18.660	439.30	433.88	5.48	N 1175611.47 / E 2281472.21	N 1175645.77 / E 2281410.06	F1	F2
G	24	48	0.16%	N-12 WT HDPE	436.74	436.66	438.68	438.26	15.150	439.35	438.93	6.59	N 1175134.47 / E 2281211.43	N 1175174.47 / E 2281184.65	G1	G2
H	24	51	0.50%	N-12 WT HDPE	437.67	437.42	438.85	438.88	8.620	439.11	439.14	4.12	N 1175135.12 / E 2280997.43	N 1175176.83 / E 2281026.59	H1	H2

PERIMETER CHANNEL REACH CHART								
UPSTREAM DOWNSLOPE CHANNEL	DOWNSTREAM DOWNSLOPE CHANNEL	BOTTOM WIDTH (ft)	SIDE SLOPE	25-YEAR VELOCITY (ft/s)	CHANNEL LINING TYPE	DESIGN MODEL CHANNEL LINING TYPE	25-YEAR FLOW RATE (cfs)	100-YEAR FLOW RATE (cfs)
1	2	10	4:1 / 4:1	3.20	ClosureTurf	Sand Infill	56.12	74.31
2	3	10	4:1 / 4:1	3.98	ClosureTurf	Sand Infill	117.40	155.63
3	4	10	4:1 / 4:1	4.57	ClosureTurf	Sand Infill	193.90	257.94
4	5	10	4:1 / 4:1	4.79	ClosureTurf	Sand Infill	232.25	310.27
5	South Pond	10	4:1 / 4:1	4.84	ClosureTurf	Sand Infill	242.04	323.64
8	West Pond	10	4:1 / 4:1	3.72	ClosureTurf	Sand Infill	92.58	122.97
9	10	10	4:1 / 4:1	2.82	ClosureTurf	Sand Infill	36.53	48.38
10	11	10	4:1 / 4:1	3.33	ClosureTurf	Sand Infill	63.14	84.09
11	West Pond	10	4:1 / 4:1	3.90	ClosureTurf	Sand Infill	110.46	147.36
12	West Pond	10	4:1 / 4:1	3.39	ClosureTurf	Sand Infill	68.29	90.92



PERIMETER BASE ALIGNMENT LINE TABLE						
LINE #	LENGTH	DIRECTION	START POINT	END POINT	START STATION	END STATION
L1	93.685	N68° 06' 19.53"E	N:1178527.68, E:2281559.36	N:1178562.610, E:2281646.28	0+00.0	0+93.7
L2	2824.644	N67° 14' 39.47"E	N:1178562.61, E:2281646.28	N:1179655.190, E:2284251.06	0+93.7	29+18.3
L3	1194.998	S62° 42' 03.14"E	N:1179652.35, E:2284330.82	N:1179104.280, E:2285392.72	30+00.7	41+95.7
L4	76.927	S08° 54' 39.27"E	N:1179093.27, E:2285400.66	N:1179017.276, E:2285412.58	42+09.8	42+86.7
L5	2209.627	S28° 57' 47.51"W	N:1179017.28, E:2285412.58	N:1177084.005, E:2284342.57	42+86.7	64+96.3
L6	104.489	N60° 38' 06.77"W	N:1177084.00, E:2284342.57	N:1177135.243, E:2284251.51	64+96.3	66+00.8
L7	251.814	N60° 38' 06.77"W	N:1177135.24, E:2284251.51	N:1177258.724, E:2284032.05	66+00.8	68+52.6
L8	43.379	N75° 09' 16.01"W	N:1177247.93, E:2283498.62	N:1177259.046, E:2283456.69	73+96.4	74+39.8
L13	259.854	S63° 45' 59.82"W	N:1177195.36, E:2282915.93	N:1177080.502, E:2282682.84	79+97.2	82+57.1
L14	794.283	S61° 49' 25.08"W	N:1177080.50, E:2282682.84	N:1176705.451, E:2281982.68	82+57.1	90+51.4
L9	518.307	N41° 07' 03.27"W	N:1176781.20, E:2281568.07	N:1177171.668, E:2281227.23	95+06.4	100+24.7
L10	478.947	N18° 11' 39.79"W	N:1177203.96, E:2281208.82	N:1177658.963, E:2281059.27	100+62.1	105+41.0
L11	70.713	N64° 40' 40.08"E	N:1178460.48, E:2281403.50	N:1178490.725, E:2281467.41	114+94.3	115+65.0
L12	99.089	N68° 06' 19.53"E	N:1178490.72, E:2281467.41	N:1178527.675, E:2281559.36	115+65.0	116+64.1

PERIMETER BASE ALIGNMENT CURVE TABLE							
CURVE #	RADIUS	LENGTH	CHORD DIRECTION	START POINT	END POINT	START STATION	END STATION
C1	95.148	82.354	S87° 57' 36.49"E	N:1179655.19, E:2284330.82	N:1179652.35, E:2284330.82	29+18.3	30+00.7
C2	15.000	14.082	S35° 48' 21.37"E	N:1179104.28, E:2285400.66	N:1179093.27, E:2285400.66	41+95.7	42+09.8
C3	100.000	85.811	N85° 13' 05.94"W	N:1177258.72, E:2283949.14	N:1177265.66, E:2283949.14	68+52.6	69+38.4
C4	747.932	457.985	S87° 44' 47.49"W	N:1177265.66, E:2283498.62	N:1177247.93, E:2283498.62	69+38.4	73+96.4
C5	744.539	557.427	S83° 17' 01.07"W	N:1177259.05, E:2282915.93	N:1177195.36, E:2282915.93	74+39.8	79+97.2
C6	338.306	454.998	N79° 38' 49.10"W	N:1176705.45, E:2281568.07	N:1176781.20, E:2281568.07	90+51.4	95+06.4
C7	93.343	37.422	N29° 40' 54.40"W	N:1177171.67, E:2281208.82	N:1177203.96, E:2281208.82	100+24.7	100+62.1
C8	659.056	953.254	N23° 14' 30.14"E	N:1177658.96, E:2281403.50	N:1178460.48, E:2281403.50	105+41.0	114+94.3

PROPOSED

- PROPOSED CONTOURS
- FINAL COVER LIMITS
- DOWNSLOPE CHANNEL ID#
- PERIMETER BASE LINE WITH STATIONS
- APPROXIMATE LIMIT OF POST CLOSURE CCR
- TOP DECK DIVERSION BERM
- 100 YR STORMWATER LIMITS
- TOP DECK DIVERSION BERM AND APPROXIMATE LIMIT OF MICRODRAIN GEOMEMBRANE

NOTES:

1. SEE SHEET GAS_3.2.4_106 OVERALL LAYOUT PLAN FOR THE LIMITS OF DISTURBANCE, APPROXIMATE POST CLOSURE CCR AND FINAL COVER LIMIT LOCATION POINT TABLES.

200 0 200 400 FT

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421–3400

ALABAMA LICENSED PROFESSIONAL ENGINEER GILBERT M. HAINES No. 25987
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166–18–0770

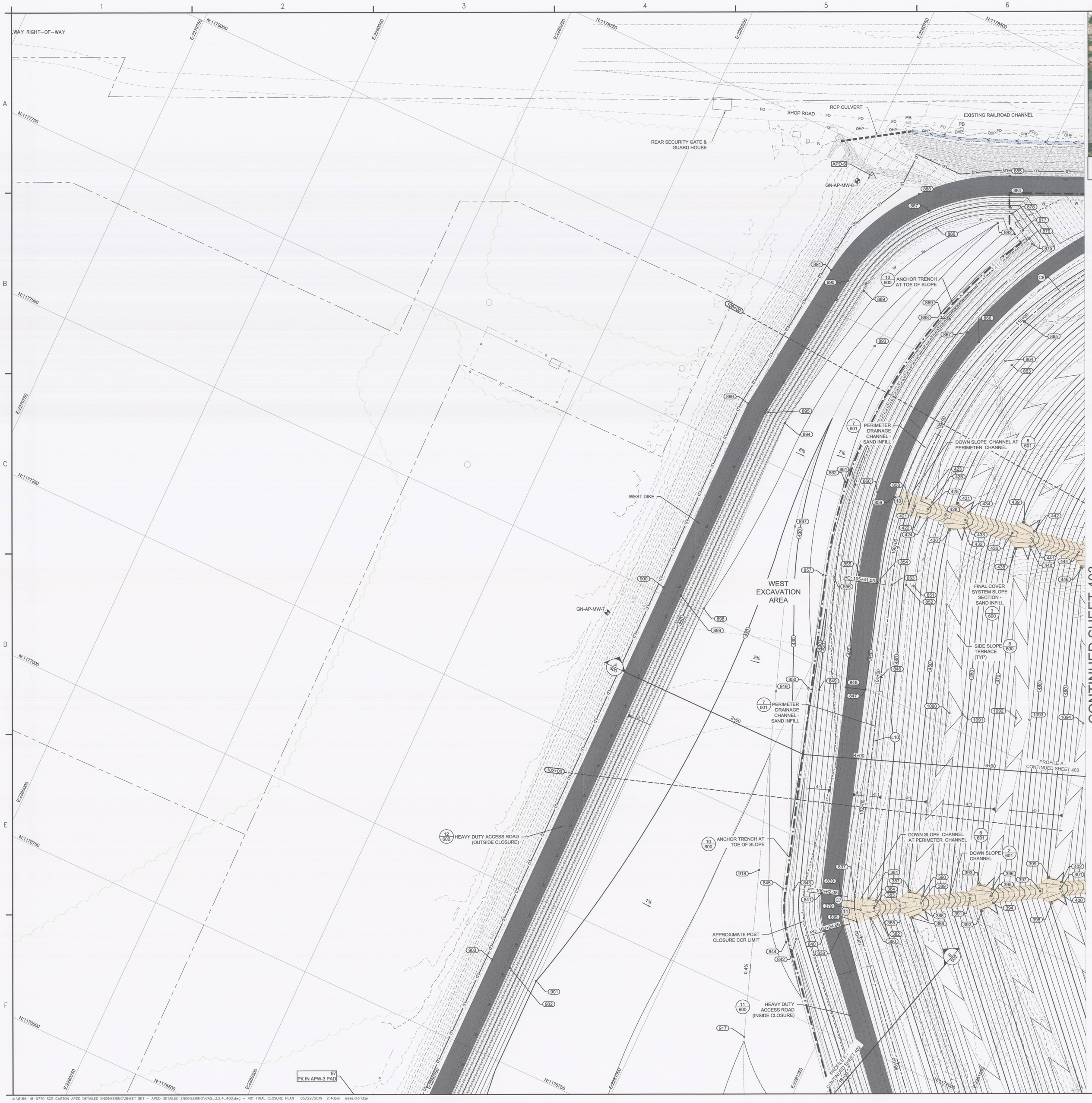
REVISIONS			
NO.	DATE	BY	APPROVED

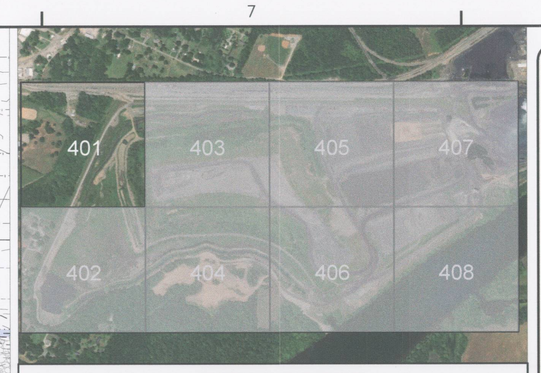
DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

OVERALL FINAL CLOSURE PLAN

SHEET NUMBER:	REV. #
GAS_3.2.4_400	0





KEY MAP

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER
No. 25037
GILBERT M. HAINES
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

FINAL CLOSURE PLAN

SHEET NUMBER:	REV. #
GAS_3.2.4_401	0

KENNEDY AVENUE

MITCHEL STREET

GN-AP-MW-6

APW-3

HEAVY DUTY ACCESS ROAD (OUTSIDE CLOSURE)

GN-AP-MW-21

APPROX. ℄ WEST DIKE

EXISTING RESIDENCE (TYP.)

GN-AP-MW-22

GN-AP-MW-5

HEAVY DUTY ACCESS ROAD (OUTSIDE CLOSURE)

WEST EXCAVATION AREA

PROFILE E CONTINUED SHEET 401

SIDE SLOPE TERRACE (TYP)

FINAL COVER SYSTEM SLOPE SECTION - SAND INFILL

FINAL COVER SYSTEM SLOPE SECTION - HYDROBINDER INFILL

PT: 95+06.36

ANCHOR TRENCH AT TOE OF SLOPE

TOE DRAIN SUMP RISER

TOE DRAIN SR-5
N: 1176657.46
E: 2281492.38

PERIMETER DRAINAGE CHANNEL - SAND INFILL

HEAVY DUTY ACCESS ROAD (INSIDE CLOSURE)

100 YR STORMWATER LIMITS

WEST STORMWATER POND

ANCHOR TRENCH AT TOE OF SLOPE

BORROW AREA ROADSIDE CHANNEL DISCHARGE TO BE EXTENDED TO BOTTOM OF SLOPE W/ RIPRAP OUTLET PROTECTION

E2
INV:425.70

PIPE E
98 LF OF
24" N-12 WT HDPE
@ 17.1%

E1
INV:442.50

GN-AP-MW-3

PIPE F
71 LF OF
30" N-12 WT HDPE
@ 8.1%

F2
INV:431.51

F1
INV:437.27

APW-4

H2
INV:437.42

PIPE H
51 LF OF
24" N-12 WT HDPE
@ 0.5%

H1
INV:437.67

G2
INV:436.66

PIPE G
48 LF OF
24" N-12 WT HDPE
@ 0.2%

G1
INV:436.74

GN-AP-MW-4

EXISTING RESIDENCE

CONTINUED SHEET 404

KEY MAP

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 25987 GILBERT M. HAINES

05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

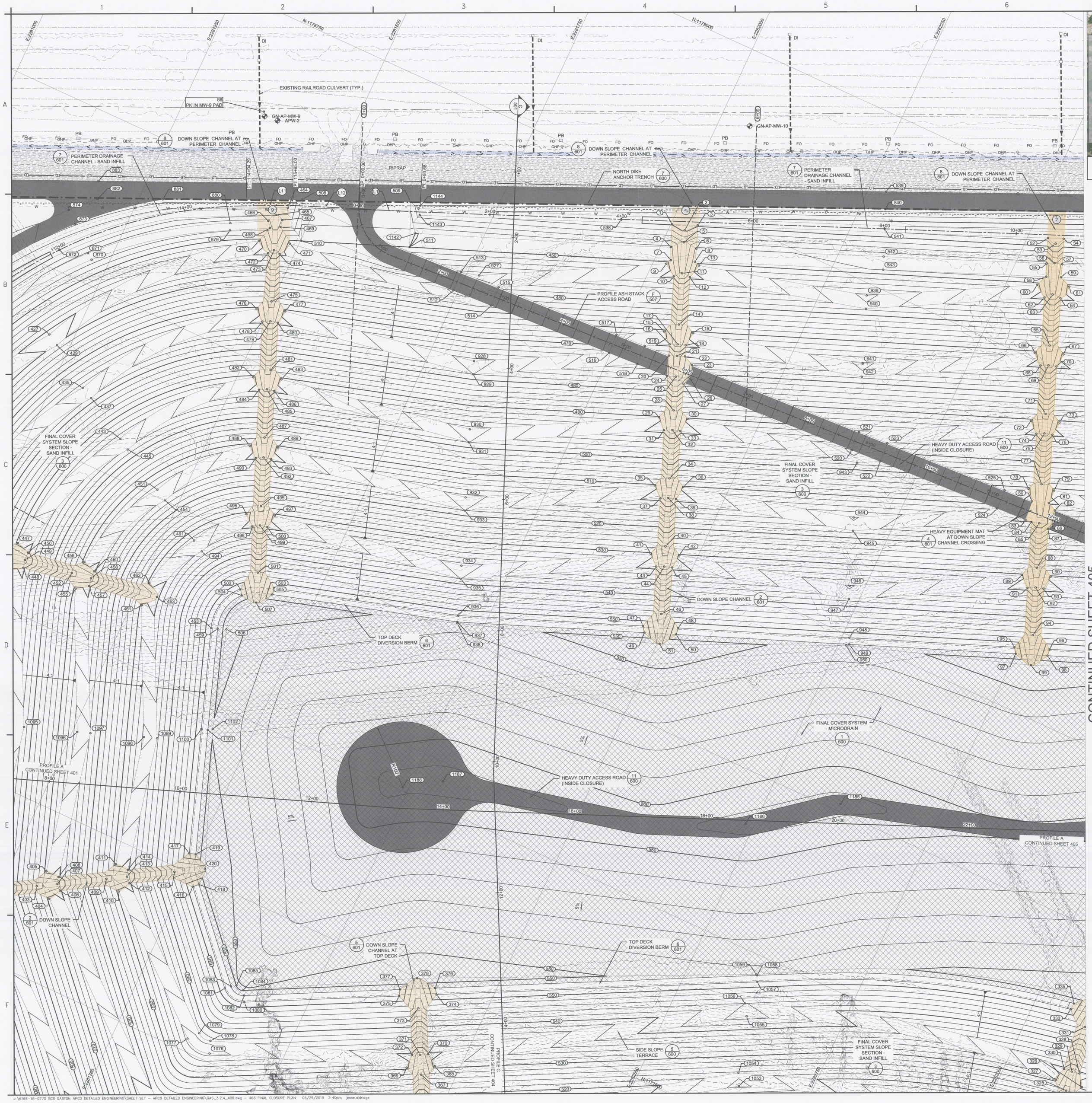
DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

FINAL CLOSURE PLAN

SHEET NUMBER:	REV. #
GAS_3.2.4_402	0

J:\6166-18-0770 SCS GASTON APCD DETAILED ENGINEERING\SHEET SET - APCD DETAILED ENGINEERING\GAS_3.2.4_400.dwg - 402 FINAL CLOSURE PLAN 05/29/2019 2:40pm jesse.aldridge



KEY MAP

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED No. 23531 PROFESSIONAL ENGINEER GILBERT M. HAINES
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

FINAL CLOSURE PLAN

SHEET NUMBER:	REV. #
GAS_3.2.4_403	0

J:\6166-18-0770 SCS GASTON APCD DETAILED ENGINEERING\SHEET SET - APCD DETAILED ENGINEERING\GAS_3.2.4_400.dwg - 403 FINAL CLOSURE PLAN 05/29/2019 2:40pm jesse.aldridge

PROFILE C
CONTINUED SHEET 403
FINAL COVER SYSTEM SLOPE SECTION - SAND INFILL
3 / 600
SIDE SLOPE TERRACE
5 / 600
DOWN SLOPE CHANNEL
2 / 601
PERIMETER DRAINAGE CHANNEL - SAND INFILL
7 / 601
HEAVY DUTY ACCESS ROAD (INSIDE CLOSURE)
11 / 600
DOWN SLOPE CHANNEL AT PERIMETER CHANNEL
8 / 601
APPROXIMATE LIMITS OF POST CLOSURE CCR
WEST STORMWATER POND
1 / 603
D2
INV:420.47
PIPE D
157 LF OF 24" HDPE @ 0.3%
D / 604
D1
INV:420.88
100 YR STORMWATER LIMITS
HEAVY DUTY ACCESS ROAD (OUTSIDE CLOSURE)
12 / 600
FINAL COVER SYSTEM SLOPE SECTION - SAND INFILL
3 / 600
TYPICAL ANCHOR TRENCH
6 / 600
MW-2 (APPROX. NEW LOCATION)
MW-1 (APPROX. NEW LOCATION)
PC: 90+51.98
PI: 82+27.07
PT: 78+67.22
BORROW AREA GRADING BY SCS
NPDES PERMIT # ALR10B832
ISSUANCE DATE: JUNE 20, 2016
EXPIRATION DATE: MARCH 31,2021
EXISTING CLOSED LANDFILL
CONTINUED SHEET 406
N:1176750
N:1176500
N:1176250
N:1176000
E:2282500
E:2282750
E:2283000
E:2283250
E:2283500
E:2283750
E:2284000
E:2284250
E:2284500
E:2284750
E:2285000
E:2285250
E:2285500
E:2285750
E:2286000
E:2286250
E:2286500
E:2286750
E:2287000
E:2287250
E:2287500
E:2287750
E:2288000
E:2288250
E:2288500
E:2288750
E:2289000
E:2289250
E:2289500
E:2289750
E:2290000
E:2290250
E:2290500
E:2290750
E:2291000
E:2291250
E:2291500
E:2291750
E:2292000
E:2292250

EXISTING RAIL LINES

EXISTING RAILROAD CULVERT (TYP.)

GN-AP-MW-11

GN-AP-MW-12

GN-AP-MW-13

APW-1

EXISTING GRAVEL ROAD

NORTH DIKE ANCHOR TRENCH (7/600)

DOWN SLOPE CHANNEL AT PERIMETER CHANNEL (8/601)

HEAVY DUTY ACCESS ROAD (OUTSIDE CLOSURE) (12/600)

ELEC. PANEL

APPROXIMATE POST CLOSURE CCR LIMIT

PERIMETER DRAINAGE CHANNEL - SAND INFILL (7/601)

DOWN SLOPE CHANNEL (2/601)

SIDE SLOPE TERRACE (5/600)

FINAL COVER SYSTEM SLOPE SECTION - SAND INFILL (3/600)

PROFILE ASH STACK ACCESS ROAD (F/507)

HEAVY ACCESS ROAD (INSIDE CLOSURE) (11/600)

TOP DECK DIVERSION BERM (6/601)

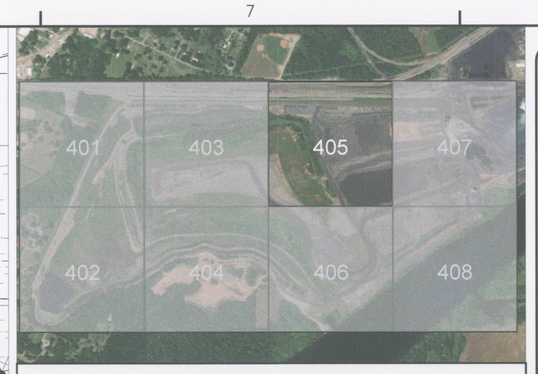
FINAL COVER SYSTEM - MICRODRAIN (600)

PROFILE A CONTINUED SHEET 403

PROFILE A CONTINUED SHEET 407

PROFILE B CONTINUED SHEET 405

CONTINUED SHEET 407



KEY MAP

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 25987 GILBERT M. HAINES

05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No: 6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

FINAL CLOSURE PLAN

SHEET NUMBER:	REV. #
GAS_3.2.4_405	0

50 0 50 100 FT

J:\6166-18-0770 SCS GASTON APCD DETAILED ENGINEERING\SHEET SET - APCD DETAILED ENGINEERING\GAS_3.2.4_400.dwg - 405 FINAL CLOSURE PLAN 05/29/2019 2:41pm jesse.aldridge

FINAL COVER SYSTEM SLOPE SECTION - SAND INFILL (3/600)

SIDE SLOPE TERRACE (5/600)

PROFILE B CONTINUED SHEET 405

DOWN SLOPE CHANNEL (2/601)

FINAL COVER SYSTEM SLOPE SECTION - SAND INFILL (3/600)

15' WIDE HEAVY ACCESS ROAD (INSIDE CLOSURE) (11/600)

A1 INV:409.60

PT: 73+96.41

PC: 74+09.73

PERIMETER DRAINAGE CHANNEL - SAND INFILL (7/601)

FINAL COVER SYSTEM SLOPE SECTION - SAND INFILL (3/600)

PRC: 69+38.43

HEAVY DUTY ACCESS ROAD (INSIDE CLOSURE) (11/600)

TOE DRAIN SR-3 N: 1177556.17 E: 2284514.47

SOUTH STORMWATER POND (1/602)

100 YR STORMWATER LIMITS

FINAL COVER SYSTEM SLOPE SECTION - HYDROBINDER (4/600)

TOE DRAIN SR-4 N: 1177154.59 E: 2284271.45

SOUTH DIKE ANCHOR TRENCH (8/600)

TYPICAL ANCHOR TRENCH (6/600)

WEST STORMWATER POND (1/603)

15' WIDE HEAVY ACCESS ROAD (INSIDE CLOSURE) (11/600)

TYPICAL POND GEOCOMPOSITE DRAIN (1/606)

HEAVY DUTY ACCESS ROAD (OUTSIDE CLOSURE) (12/600)

GN-AP-MW-18

B1 INV:409.50

FINAL COVER SYSTEM SLOPE SECTION - SAND INFILL (3/600)

100 YR STORMWATER LIMITS

PIPE B 280 LF OF 30" HDPE @ 0.4% (B/604)

FINAL COVER SLOPE SECTION - SAND INFILL (3/600)

TRACTOR GARAGE METAL SIDING BUILDING

ARTICULATED CONC. BLOCK MAT AUXILIARY SPILLWAY

TRAILER

EXISTING RIPRAP

B2 INV:408.35

GN-AP-MW-19

TYPICAL ANCHOR TRENCH (6/600)

GN-AP-MW-20

EXISTING CLOSED LANDFILL

COOSA RIVER / LAY LAKE
APPROXIMATE NORMAL WATER SURFACE ELEVATION 396'
FERC PROJECT BOUNDARY ELEV. 406'
APPROXIMATE 100 YR ELEV. 403'

WOOD DOCK

METAL SIDING BOAT HOUSE

CONTINUED SHEET 408

KEY MAP

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED No. 25591 PROFESSIONAL ENGINEER GILBERT M. HAINES

05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No: 6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

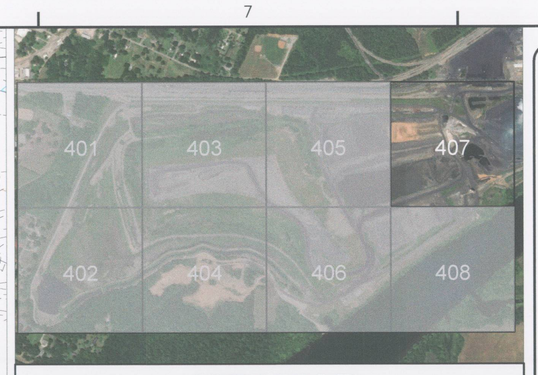
SHEET TITLE:

FINAL CLOSURE PLAN

SHEET NUMBER:	REV. #
GAS_3.2.4_406	0

50 0 50 100 FT

J:\6166-18-0770 SCS GASTON APCD DETAILED ENGINEERING\SHEET SET - APCD DETAILED ENGINEERING\GAS_3.2.4_400.dwg - 406 FINAL CLOSURE PLAN 05/29/2019 2:41pm jesse.aldridge



KEY MAP

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 29587 GILBERT M. HAINES
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No: 6166-18-0770

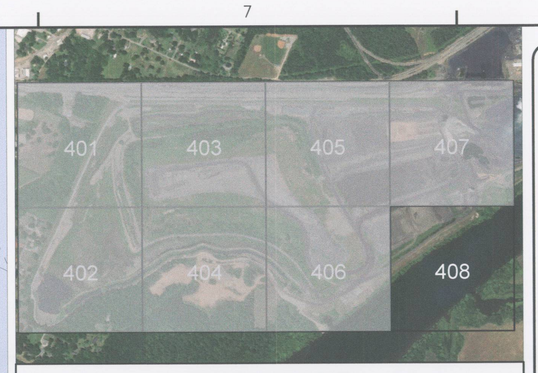
REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

FINAL CLOSURE PLAN

SHEET NUMBER:	REV. #
GAS_3.2.4_407	0



KEY MAP

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 25587 GILBERT M. HAINES
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

FINAL CLOSURE PLAN

SHEET NUMBER:	REV. #
GAS_3.2.4_408	0

NOTES:

1. CONTRACTOR TO COORDINATE IN ADVANCE OF ANY WORK ON RIPRAP LINED SWALE WITH SCS FOR SCS'S PERMITTING EFFORTS REQUIRED FOR WORK WITHIN THE FERC PROJECT BOUNDARY (APPROX. ELEVATION 406') AND WITHIN THE COOSA RIVER.

N

50 0 50 100 FT

J:\6166-18-0770 SCS GASTON APCD DETAILED ENGINEERING\SHEET SET - APCD DETAILED ENGINEERING\GAS_3.2.4_400.dwg - 408 FINAL CLOSURE PLAN 05/29/2019 2:42pm jesse.aldridge

WORK POINT TABLE (FINAL COVER)

POINT #	NORTHING	EASTING	DESIGN ELEV.
1	1178706.4	2282002.0	439.82
2	1178706.2	2282023.0	439.72
3	1178721.4	2282037.8	439.62
4	1178674.0	2282014.7	448.50
5	1178689.1	2282029.7	444.34
6	1178688.2	2282050.9	448.50
7	1178655.8	2282023.2	448.91
8	1178669.1	2282057.1	448.91
9	1178648.3	2282019.1	450.75
10	1178635.5	2282037.6	449.37
11	1178644.9	2282047.0	446.03
12	1178644.5	2282060.2	449.37
13	1178666.5	2282065.2	450.75
14	1178571.9	2282075.5	465.61
15	1178552.7	2282059.8	470.66
16	1178538.7	2282075.5	469.36
17	1178543.8	2282086.5	467.12
18	1178547.5	2282098.2	469.36
19	1178568.7	2282100.2	470.65
20	1178522.5	2282081.8	473.66
21	1178527.2	2282093.0	471.58
22	1178531.7	2282104.4	473.62
23	1178524.1	2282119.6	476.79
24	1178493.0	2282092.3	474.64
25	1178497.7	2282104.6	472.38
26	1178505.4	2282124.1	476.62
27	1178493.0	2282119.8	477.00
28	1178449.8	2282123.3	485.33
29	1178430.7	2282107.5	490.35
30	1178446.7	2282147.8	490.32
31	1178416.1	2282122.7	489.11
32	1178421.7	2282134.3	486.83
33	1178425.5	2282145.9	489.06
34	1178352.8	2282161.3	505.33
35	1178333.8	2282145.5	510.35
36	1178349.7	2282185.7	510.33
37	1178319.6	2282161.4	509.08
38	1178324.9	2282172.2	506.83
39	1178328.5	2282183.7	509.06
40	1178255.9	2282199.2	525.33
41	1178236.8	2282183.4	530.35
42	1178252.7	2282223.7	530.34
43	1178222.6	2282199.2	529.08
44	1178227.8	2282210.2	526.84
45	1178231.5	2282221.8	529.07
46	1178160.2	2282236.6	545.00
47	1178131.8	2282219.0	552.00
48	1178151.5	2282268.8	552.00
49	1178123.5	2282225.1	552.00
50	1178141.2	2282270.0	552.00
51	1178117.5	2282253.5	548.00
52	1178927.3	2282528.7	436.92
53	1178924.6	2282543.0	436.85
54	1178936.6	2282550.8	436.80
55	1178891.0	2282543.0	446.67
56	1178896.7	2282553.9	444.33
57	1178900.2	2282565.2	446.59
58	1178872.7	2282551.1	447.07
59	1178881.3	2282571.8	446.99
60	1178855.6	2282543.8	450.74
61	1178873.6	2282589.2	450.74
62	1178842.8	2282562.1	449.37
63	1178852.1	2282571.4	446.03
64	1178851.7	2282584.6	449.37
65	1178779.6	2282600.0	465.53
66	1178759.9	2282584.0	470.67
67	1178776.1	2282625.1	470.66
68	1178745.9	2282600.3	469.37
69	1178751.5	2282611.1	467.05
70	1178754.9	2282622.8	469.36
71	1178682.4	2282638.3	485.61
72	1178663.0	2282622.5	490.68
73	1178679.1	2282663.1	490.69
74	1178649.0	2282638.4	489.46
75	1178654.6	2282649.3	487.12
76	1178657.9	2282661.0	489.46
77	1178582.3	2282677.7	506.52
78	1178567.7	2282662.7	510.58
79	1178581.7	2282699.2	510.69
80	1178552.6	2282675.6	509.42
81	1178561.2	2282699.8	509.46
82	1178554.5	2282712.8	512.22
83	1178522.7	2282678.5	509.34
84	1178523.6	2282687.8	510.00
85	1178526.9	2282699.5	508.27
86	1178534.6	2282719.5	512.68
87	1178524.6	2282715.6	512.32
88	1178463.8	2282724.4	525.25
89	1178444.2	2282708.5	530.36
90	1178460.5	2282749.3	530.34
91	1178430.2	2282724.6	529.09
92	1178435.7	2282735.5	526.77
93	1178439.2	2282747.1	529.07
94	1178367.8	2282762.2	545.00
95	1178339.5	2282744.6	552.00
96	1178359.2	2282794.4	552.00
97	1178331.2	2282750.7	552.00
98	1178348.9	2282795.6	552.00
99	1178325.2	2282779.0	548.00
100	1179264.3	2283332.1	432.56

WORK POINT TABLE (FINAL COVER)

POINT #	NORTHING	EASTING	DESIGN ELEV.
101	1179263.3	2283351.0	432.47
102	1179277.0	2283362.3	432.40
103	1179223.4	2283349.5	443.67
104	1179233.6	2283362.6	440.52
105	1179235.5	2283378.7	443.56
106	1179214.3	2283370.2	441.15
107	1179198.1	2283376.6	445.52
108	1179178.7	2283361.5	450.46
109	1179195.0	2283401.7	450.67
110	1179164.7	2283376.6	449.37
111	1179170.3	2283387.5	447.01
112	1179173.7	2283399.4	449.37
113	1179206.4	2283360.7	444.06
114	1179101.5	2283414.6	465.49
115	1179081.7	2283398.4	470.67
116	1179098.1	2283439.8	470.67
117	1179067.7	2283414.6	469.37
118	1179215.4	2283382.5	443.98
119	1179073.4	2283425.6	467.00
120	1179076.8	2283437.5	469.37
121	1179004.2	2283452.8	485.57
122	1178984.9	2283436.8	490.67
123	1179001.0	2283477.7	490.68
124	1178970.8	2283452.7	489.45
125	1178976.4	2283463.7	487.07
126	1178979.8	2283475.6	489.45
127	1178907.9	2283490.6	505.48
128	1178888.1	2283474.5	510.67
129	1178904.4	2283516.0	510.69
130	1178874.2	2283490.9	509.36
131	1178880.1	2283501.6	506.97
132	1178883.1	2283513.4	509.38
133	1178811.0	2283528.7	525.52
134	1178791.3	2283512.7	530.66
135	1178807.5	2283553.8	530.67
136	1178777.4	2283528.9	529.37
137	1178782.9	2283539.7	527.06
138	1178786.2	2283551.4	529.37
139	1178716.1	2283566.0	545.00
140	1178687.7	2283548.3	552.00
141	1178707.4	2283598.2	552.00
142	1178679.4	2283554.4	552.00
143	1178697.1	2283599.4	552.00
144	1178673.4	2283582.8	548.00
145	1179526.4	2284545.9	425.89
146	1179491.4	2284509.0	440.00
147	1179487.5	2284525.3	436.82
148	1179475.8	2284537.4	440.00
149	1179469.3	2284515.5	437.44
150	1179471.8	2284503.1	440.40
151	1179460.2	2284524.3	440.41
152	1179440.8	2284500.3	445.52
153	1179440.3	2284475.0	450.67
154	1179419.3	2284513.7	450.67
155	1179418.9	2284474.7	449.36
156	1179414.1	2284486.0	447.05
157	1179407.4	2284496.0	449.37
158	1179338.9	2284432.0	466.02
159	1179333.2	2284442.6	464.01
160	1179327.5	2284453.2	466.01
161	1179305.9	2284402.4	470.83
162	1179285.2	2284441.9	470.65
163	1179284.5	2284402.7	469.45
164	1179280.0	2284414.1	467.05
165	1179273.3	2284424.2	469.35
166	1179213.9	2284378.7	485.79
167	1179212.5	2284351.0	491.44
168	1179193.9	2284391.9	490.63
169	1179191.3	2284353.0	489.91
170	1179187.8	2284364.7	487.28
171	1179181.5	2284375.0	489.48
172	1179123.3	2284330.2	505.52
173	1179122.9	2284304.8	510.68
174	1179101.8	2284343.7	510.66
175	1179101.4	2284304.6	509.38
176	1179096.7	2284315.9	507.04
177	1179089.9	2284326.0	509.37
178	1178864.1	2284270.8	552.00
179	1179031.6	2284280.9	525.52
180	1178859.2	2284279.6	552.00
181	1179031.1	2284255.8	530.66
182	1179010.1	2284294.5	530.67
183	1179009.8	2284255.5	529.37
184	1179004.9	2284266.7	527.05
185	1178998.1	2284276.8	529.38
186	1178900.1	2284267.6	552.00
187	1178941.6	2284232.8	545.00
188	1178891.3	2284262.9	552.00
189	1178936.7	2284199.8	552.00
190	1178911.3	2284247.0	552.00
191	1178926.8	2284197.4	552.00
192	1178903.8	2284240.0	552.00
193	1178901.2	2284211.2	548.00
194	1178881.1	2284251.8	548.43
195	1179291.4	2285001.2	423.14
196	1179245.2	2284962.3	440.00
197	1179239.3	2284972.9	437.97
198	1179233.6	2284983.6	440.00
199	1179225.1	2284965.2	438.45
200	1179225.9	2284955.9	440.40

WORK POINT TABLE (FINAL COVER)

POINT #	NORTHING	EASTING	DESIGN ELEV.
201	1179217.8	2284970.9	440.40
202	1179196.7	2284949.7	445.53
203	1179190.9	2284960.4	447.56
204	1179195.6	2284926.0	450.61
205	1179176.2	2284961.8	450.61
206	1179170.1	2284935.3	448.00
207	1178398.6	2285056.8	411.82
208	1178389.6	2285042.9	411.78
209	1178421.7	2285013.9	424.00
210	1178408.5	2285009.1	421.47
211	1178397.5	2285000.4	424.00
212	1178511.3	2284855.4	429.88
213	1178497.7	2284847.8	427.00
214	1178484.2	2284840.3	429.88
215	1178531.2	2284787.4	444.27
216	1178563.1	2284784.5	450.80
217	1178516.7	2284758.8	450.80
218	1178559.4	2284761.4	449.37
219	1178545.8	2284761.0	445.79
220	1178538.2	2284749.7	449.37
221	1178598.4	2284665.9	463.98
222	1178638.5	2284639.2	470.67
223	1178599.7	2284617.8	470.67
224	1178638.9	2284617.8	469.37
225	1178627.7	2284613.0	467.02
226	1178617.7	2284606.1	469.37
227	1178663.7	2284548.0	485.61
228	1178688.8	2284547.9	490.70
229	1178650.5	2284526.9	490.65
230	1178689.4	2284526.6	489.47
231	1178678.1	2284521.8	487.11
232	1178668.1	2284515.0	489.43
233	1178713.8	2284457.4	505.51
234	1178739.5	2284457.1	510.73
235	1178700.5	2284435.7	510.69
236	1178739.8	2284435.7	509.42
237	1178728.4	2284431.0	507.03
238	1178718.4	2284424.0	509.38
239	1178764.2	2284366.3	525.52
240	1178789.6	2284366.1	530.67
241	1178750.9	2284344.7	530.67
242	1178790.1	2284344.7	529.38
243	1178778.8	2284339.9	527.04
244	1178768.8	2284333.0	529.37
245	1178813.6	2284277.0	545.00
246	1178846.7	2284272.6	552.00
247	1178799.8	2284246.7	552.00
248	1178849.2	2284262.6	552.00
249	1178806.9	2284239.2	552.00
250	1178835.8	2284236.9	548.00
251	1177690.0	2284667.9	410.87
252	1177683.2	2284654.6	410.92
253	1177716.0	2284622.3	424.00
254	1177703.9	2284616.9	421.66
255	1177692.8	2284609.5	424.00
256	1177804.9	2284463.8	429.90
257	1177791.2	2284456.4	427.14
258	1177778.5	2284449.4	429.90
259	1177827.0	2284392.1	445.51
260	1177852.4	2284391.9	450.67
261	1177813.7	2284370.5	450.67
262	1177841.5	2284365.6	447.03
263	1177852.8	2284370.5	449.37
264	1177831.5	2284358.7	449.37
265	1177891.5	2284274.4	464.03
266	1177931.3	2284247.9	470.69
267	1177892.6	2284226.7	470.64
268	1177931.7	2284226.4	469.39
269	1177920.4	2284221.6	467.05
270	1177910.3	2284214.8	469.35
271	1177956.3	2284156.1	485.73
272	1177980.6	2284156.3	490.66
273	1177943.2	2284135.7	490.63
274	1177981.7	2284135.1	489.45
275	1177970.7	2284129.9	487.23
276	1177960.4	2284123.4	489.43
277	1178005.8	2284065.7	505.53
278	1178031.5	2284065.3	510.74
279	1177992.5	2284044.1	510.67
280	1178031.7	2284044.0	509.42
281	1178020.4	2284039.2	507.04
282	1178010.3	2284032.3	509.38
283	1178055.8	2283974.5	525.51
284	1178081.2	2283974.2	530.67
285	1178042.5	2283952.8	530.66
286	1178081.6	2283952.8	529.37
287	1178070.3	2283948.0	527.03
288	1178060.3	2283941.0	529.38
289	1178104.9	2283884.9	545.00
290	1178137.8	2283880.5	552.00
291	1178090.9	2283854.5	552.00
292	1178140.3	2283870.4	552.00
293	1178098.0	2283847.0	552.00
294	1178126.7	2283846.6	548.00
295	1177286.4	2283170.0	434.52
296	1177300.8	2283182.9	438.55
297	1177296.9	2283152.8	438.73
298	1177311.4	2283178.7	438.79
299	1177306.7	2283167.0	436.00
300	1177308.3	2283154.3	438.93

WORK POINT TABLE (FINAL COVER)

POINT #	NORTHING	EASTING	DESIGN ELEV.
301	1177345.3	2283161.3	445.57
302	1177361.3	2283180.9	450.65
303	1177354.6	2283138.0	450.65
304	1177378.8	2283168.7	449.38
305	1177376.3	2283156.8	447.15
306	1177375.0	2283144.5	449.35
307	1177449.4	2283146.0	465.63
308	1177464.3	2283165.7	470.66
309	1177457.7	2283122.8	470.66
310	1177481.8	2283153.5	469.37
311	1177479.3	2283141.6	467.15
312	1177478.1	2283129.3	469.36
313	1177552.8	2283130.7	485.72
314	1177567.3	2283150.3	490.66
315	1177560.7	2283107.9	490.64
316	1177584.9	2283138.3	489.44
317	1177582.4	2283126.4	487.22
318	1177581.1	2283114.1	489.42
319	1177655.2	2283115.6	505.63
320	1177670.1	2283135.4	510.66
321	1177663.4	2283092.4	510.65
322	1177687.6	2283123.1	509.37
323	1177685.1	2283111.2	507.15
324	1177683.8	2283099.0	509.34
325	1177758.2	2283100.5	525.63
326	1177773.1	2283120.2	530.66
327	1177766.6	2283077.2	530.65
328	1177790.6	2283107.9	529.37
329	1177788.1	2283096.1	527.15
330	1177786.9	2283083.9	529.36
331	1177858.7	2283085.6	545.00
332	1177882.3	2283111.0	552.00
333	1177873.8	2283054.5	552.00
334	1177892.0	2283107.8	552.00
335	1177884.1	2283055.4	552.00
336	1177904.1	2283078.9	548.00
337	1176949.3	2282415.4	436.81
338	1176967.4	2282423.5	440.07
339	1176952.8	2282396.2	439.91
340	1176966.2	2282406.7	437.19
341	1176964.1	2282394.2	440.15
342	1176975.6	2282415.5	440.27
343	1176997.4	2282390.8	445.61
344	1177018.4	2282404.4	450.66
345	1176998.6	2282365.7	450.66
346	1177030.9	2282387.2	449.36
347	1177024.7	2282376.8	447.15
348	1177019.9	2282365.6	449.37
349	1177091.0	2282342.9	465.63
350	1177111.2	2282357.0	470.66
351	1177091.3	2282318.2	470.66
352	1177123.7	2282339.8	469.37
353	1177117.4	2282329.3	467.14
354	1177112.6	2282318.2	469.37
355	1177183.5	2282295.5	485.71
356	1177203.6	2282309.2	490.63
357	1177184.1	2282271.2	490.63
358	1177216.3	2282292.3	489.43
359	1177208.3	2282278.3	487.21
360	1177205.3	2282270.7	489.43
361	1177275.8	2282248.2	505.66
362	1177296.1	2282262.1	510.64
363	1177276.5	2282223.7	510.64
364	1177308.8	2282245.0	509.37
365	1177302.7	2282234.5	507.17
366	1177297.7	2282223.4	509.37
367	1177368.4	2282200.9	525.63
368	1177388.8	2282214.5	530.65
369	1177369.0	2282176.3	530.60
370	1177401.3	2282197.6	529.34
371	1177395.2	2282187.1	527.14
372	1177390.3	2282176.0	529.34
373	1177458.8	2282154.6	545.00
374	1177489.5	2282170.9	552.00
375	1177463.5	2282120.1	552.00
376	1177497.6	2282164.8	552.00
377	1177473.2	2282117.1	552.00
378	1177499.6	2282133.7	548.00
379	1177190.7	2281224.6	435.35
380	1177184.8	2281245.0	438.52
381	1177212.0	2281229.3	438.62
382	1177193.5	2281252.0	438.75
383	1177201.3	2281242.3	435.77
384	1177213.7	2281240.4	438.83
385	1177221.5	2281276.3	445.55
386	1177212.1	2281301.6	450.67
387	1177248.3	2281280.1	450.67
388	1177230.4	2281311.1	449.37
389	1177237.8	2281303.5	447.14
390	1177248.0	2281300.6	449.37
391	1177276.0	2281367.7	465.56
392	1177266.5	2281392.9	470.67
393	1177302.7	2281371.4	470.67
394	1177284.7	2281402.4	469.37
395	1177292.2	2281394.8	467.14
396	1177302.4	2281391.9	469.37
397	1177331.0	2281459.9	485.82
398	1177321.5	2281483.5	490.64
399	1177356.2	2281462.8	490.65
400	1177339.2	2281493.6	489.52

WORK POINT TABLE (FINAL COVER)

POINT #	NORTHING	EASTING	DESIGN ELEV.
401	1177346.6	2281486.2	487.35
402	1177356.7	2281483.2	489.52
403	1177384.6	2281550.0	505.55
404	1177375.2	2281575.4	510.69
405	1177411.5	2281553.7	510.69
406	1177393.4	2281584.8	509.40
407	1177400.8	2281577.2	507.14
408	1177411.1	2281574.3	509.39
409	1177439.1	2281641.4	525.59
410	1177429.6	2281666.7	530.73
411	1177465.6	2281644.9	530.66
412	1177447.8	2281676.2	529.42
413	1177455.3	2281668.5	527.17
414	1177465.3	2281665.5	529.34
415	1177492.3	2281730.6	545.00
416	1177483.3	2281765.5	552.00
417	1177527.3	2281739.3	552.00
418	1177490.4	2281772.6	552.00
419	1177530.1	2281748.9	552.00
420	1177516.2	2281770.8	548.00
421	1177783.7	2281040.6	438.57
422	1177770.9	2281054.9	441.53
423	1177801.0	2281051.0	441.69
424	1177775.2	2281065.3	441.77
425	1177786.9	2281060.4	438.97
426	1177799.5	2281062.3	441.89
427	1178156.4	2281214.1	461.53
428	1177791.4	2281088.3	445.59
429	1178146.4	2281231.6	460.53
430	1177772.0	2281104.5	450.66
431	1177814.8	2281098.4	450.67
432	1177784.3	2281121.7	449.39
433	1177796.3	2281119.0	447.15
434	1177808.2	2281118.3	449.41
435	1178103.6	2281294.4	479.42
436	1177808.0	2281192.1	465.63
437	1178094.8	2281312.6	478.47
438	1177788.4	2281207.3	470.66
439	1177831.2	2281201.4	470.65
440	1177800.8	2281224.5	469.37
441	1177812.7	2281221.9	467.15
442	1177824.5	2281221.3	469.39
443	1178057.2	2281378.7	497.50
444	1177824.5	2281295.3	485.73
445	1178047.3	2281396.3	496.50
446	1177805.2	2281310.3	490.67
447	1177847.3	2281304.6	490.65
448	1177817.2	2281327.4	489.47
449	1177829.2	2281324.8	487.23
450	1177840.8	2281324.4	489.48
451	1178010.6	2281462.4	515.47
452	1177840.8	2281397.6	505.64
453	1177853.5	2281624.9	552.00
454	1178000.4	2281479.8	514.47
455	1177821.3	2281412.9	510.67
456	1177864.1	2281407.7	510.67
457	1177833.5	2281430.0	509.40
458	1177845.6	2281427.5	507.16
459	1177856.8	2281634.3	552.00
460	1177857.2	2281427.3	509.43
461	1177841.0	2281514.6	530.56
462	1177876.5	2281510.8	530.53
463	1177862.0	2281530.2	529.15
464	1178483.9	2281461.5	442.00
465	1178466.7	2281449.5	441.89
466	1178453.5	2281443.0	444.59
467	1178463.6	2281461.8	444.24
468	1178444.8	2281450.0	444.78
469	1178452.8	2281463.8	444.70
470	1178419.6	2281442.8	450.72
471	1178435.8	2281487.2	450.78
472	1178408.8	2281463.6	449.28
473	1178416.6	2281469.7	446.95
474	1178414.7	2281479.9	449.47
475	1178344.0	2281499.0	465.52
476	1178323.9	2281483.3	470.67
477	1178339.0	2281524.3	470.63
478	1178310.3	2281499.4	469.39
479	1178316.0	2281510.3	467.04
480	1178318.5	2281521.5	469.34
481	1178248.4	2281541.8	485.66
482	1178227.3	2281522.7	490.67
483	1178242.3	2281562.7	490.62
484	1178213.7	2281538.5	489.48
485	1178219.4	2281549.2	487.14
486	1178221.9	2281560.3	489.41
487	1178151.0	2281576.7	505.56
488	1178130.3	2281561.5	510.69
489	1178146.0	2281601.8	510.63
490	1178117.0	2281577.6	509.44
491	1177963.4	2281545.7	533.38
492	1178122.9	2281588.0	507.07
493	1178125.4	2281599.1	509.34
494	1177953.3	2281563.1	532.38
495	1178054.3	2281615.6	525.57
496	1178033.4	2281600.8	530.67
497	1178049.4	2281640.7	530.63
498	1178020.4	2281616.8	529.42
499	1178026.4	2281626.9	527.08
500	1178028.9	2281638.0	529.34

WORK POINT TABLE (FINAL COVER)

POINT #	NORTHING	EASTING	DESIGN ELEV.
501	1177959.9	2281653.7	545.00
502	1177926.2	2281640.2	552.00
503	1177949.0	2281686.4	552.00
504	1177918.0	2281646.3	552.00
505	1177939.0	2281687.7	552.00
506	1177861.3	2281647.0	548.63
507	1177917.3	2281670.6	548.00
508	1178504.5	2281476.1	445.00
509	1178570.5	2281627.2	445.00
510	1178446.9	2281501.3	450.00
511	1178507.5	2281654.7	450.00
512	1178475.4	2281742.9	458.47
513	1178505.3	2281741.4	458.47
514	1178478.5	2281804.6	457.37
515	1178508.4	2281803.1	457.37
516	1178488.2	2281997.6	472.83
517	1178518.2	2281996.1	472.83
518	1178490.6	2282043.9	470.51
519	1178520.6	2282042.4	470.51
520	1178508.3	2282394.3	498.57
521	1178538.3	2282392.7	498.57
522	1178510.7	2282440.5	496.30
523	1178540.6	2282439.0	496.30
524	1178520.4	2282632.2	511.67
525	1178550.3	2282630.7	511.67
526	1178542.7	2283072.9	540.96
527	1178572.6	2283071.4	540.96
528	1178547.1	2283160.9	541.97
529	1178577.1	2283159.3	541.98
530	1178553.5	2283286.1	552.00
531	1178583.4	2283284.4	552.00
532	1178555.1	2283317.4	552.10
533	1178585.0	2283315.6	552.00
534	1178592.5	2283334.7	552.00
535	1178595.6	2283359.2	550.46
536	1178559.0	2283396.7	552.50
537	1178589.0	2283395.1	551.01
538	1178681.1	2281928.8	440.28
539	1178888.1	2282275.7	445.00
540	1178863.5	2282286.0	445.00
541	1178835.8	2282297.6	438.16
542	1178796.7	2282314.1	447.52
543	1178778.2	2282321.8	447.93
544	1179214.4	2283006.4	445.00
545	1179188.6	2283017.2	445.00
546	1179145.3	2283035.4	434.16
547	1179101.5	2283053.7	444.77
548	1179083.1	2283061.4	445.17
549	1179540.5	2283737.2	445.00
550	1179513.7	2283748.3	445.00
551	1179454.7	2283773.1	430.16
552	1179406.4	2283793.4	442.01
553	1179387.9	2283801.1	442.41
554	1179791.1	2284299.1	445.00
555	1179655.2	2284251.1	427.57
556	1179604.5	2284272.3	440.06
557	1179585.8	2284279.6	440.46
558	1179755.2	2284383.9	442.71
559	1179652.3	2284330.8

WORK POINT TABLE (FINAL COVER)

POINT #	NORTHING	EASTING	DESIGN ELEV.
801	1176754.4	2281585.9	431.52
802	1176768.7	2281572.4	431.70
803	1176715.1	2281607.8	435.88
804	1176694.7	2281584.9	435.87
805	1176714.6	2281543.0	431.59
806	1176728.3	2281528.3	431.14
807	1176790.7	2281531.9	435.94
808	1176772.7	2281507.8	435.95
809	1176811.1	2281474.2	436.21
810	1176813.5	2281439.0	434.51
811	1176806.4	2281430.7	433.65
812	1176772.5	2281413.8	431.83
813	1176736.5	2281425.3	430.00
814	1176756.9	2281441.5	423.64
815	1176763.4	2281449.0	423.64
816	1176871.4	2281421.6	436.60
817	1176836.1	2281419.2	434.51
818	1176829.0	2281411.0	433.65
819	1176774.9	2281383.8	431.83
820	1176717.2	2281402.4	430.00
821	1176855.6	2281370.7	424.55
822	1176838.1	2281372.1	424.50
823	1176768.3	2281356.1	424.49
824	1176703.0	2281385.4	424.47
825	1176845.9	2281357.5	426.13
826	1176766.5	2281339.7	426.10
827	1176692.3	2281373.0	426.06
828	1176653.6	2281552.6	422.89
829	1176645.9	2281546.2	422.89
830	1176624.4	2281527.6	430.00
831	1176601.8	2281507.9	430.00
832	1176583.5	2281491.4	423.84
833	1176571.4	2281480.3	425.44
834	1176475.6	2282044.8	420.97
835	1176419.9	2282097.9	422.74
836	1177171.7	2281227.2	434.35
837	1177204.0	2281208.8	434.44
838	1177157.9	2281211.4	438.35
839	1177197.4	2281188.9	438.44
840	1177138.1	2281188.8	438.35
841	1177188.0	2281160.4	438.44
842	1177108.7	2281155.2	427.18
843	1177174.7	2281119.8	427.75
844	1177098.2	2281142.8	428.74
845	1177170.0	2281104.1	429.33
846	1177525.0	2281103.3	436.11
847	1177497.9	2281090.1	440.00
848	1177488.5	2281061.6	440.00
849	1177468.4	2281026.2	430.00
850	1177463.7	2281010.7	431.57
851	1177672.2	2281089.7	441.22
852	1177668.8	2281079.2	441.00
853	1177659.0	2281059.3	436.80
854	1177655.3	2281038.4	440.82
855	1177652.2	2281007.8	440.85
856	1177634.2	2280974.1	431.42
857	1177629.4	2280958.7	432.97
858	1177781.9	2281031.5	437.43
859	1177782.9	2281006.6	441.46
860	1177778.5	2280980.1	441.44
861	1177774.5	2280945.0	432.52
862	1177772.1	2280929.0	434.09
863	1178040.0	2281083.4	443.15
864	1178041.8	2281072.2	442.92
865	1178108.5	2281073.1	439.08
866	1178050.8	2281023.5	442.78
867	1178057.2	2281001.5	442.72
868	1178063.8	2280968.9	434.47
869	1178066.8	2280952.9	436.04
870	1178287.1	2281224.4	444.63
871	1178293.7	2281215.2	444.39
872	1178280.3	2281173.9	440.07
873	1178326.3	2281178.9	444.33
874	1178341.5	2281161.0	444.52
875	1178220.6	2281034.2	435.38
876	1178225.7	2281025.9	435.48
877	1178234.3	2281012.0	435.63
878	1178249.9	2280986.8	435.91
879	1178415.9	2281396.3	445.74
880	1178426.1	2281392.2	445.52
881	1178416.0	2281283.8	445.01
882	1178374.6	2281193.8	445.01
883	1178400.5	2281183.5	445.00
884	1178273.0	2280971.5	445.00
885	1178300.5	2280959.6	445.00
886	1178182.0	2280891.5	435.90
887	1178200.0	2280870.8	445.00
888	1178217.5	2280846.3	445.00
889	1178048.4	2280832.7	435.30
890	1178052.1	2280803.8	445.00
891	1178055.9	2280774.0	445.00
892	1178227.3	2280973.0	432.00
893	1177978.7	2280882.6	430.45
894	1177814.7	2280808.4	433.86
895	1177816.7	2280774.9	445.00
896	1177818.4	2280744.9	445.00
897	1177678.3	2280888.7	429.39
898	1177506.8	2280815.3	432.00
899	1177509.8	2280776.3	445.00
900	1177510.3	2280746.3	445.00

WORK POINT TABLE (FINAL COVER)

POINT #	NORTHING	EASTING	DESIGN ELEV.
901	1176885.1	2280824.2	430.00
902	1176886.3	2280779.2	445.00
903	1176886.3	2280749.2	445.00
904	1176110.4	2280821.7	432.00
905	1176109.7	2280782.7	445.00
906	1176111.2	2280752.7	445.00
907	1175555.0	2280813.3	435.64
908	1175554.9	2280785.2	445.00
909	1175554.8	2280755.2	444.40
910	1175515.6	2280826.5	435.85
911	1175498.1	2280807.3	444.69
912	1175478.0	2280785.1	444.09
913	1176407.5	2281933.4	421.81
914	1176392.6	2281652.6	422.96
915	1176472.9	2281502.1	423.65
916	1176647.0	2281323.2	424.65
917	1176940.8	2281146.0	426.02
918	1177180.6	2281059.2	427.05
919	1177438.4	2280968.0	428.50
920	1179152.3	2285219.8	429.50
921	1178997.4	2285141.5	430.00
922	1179001.0	2285121.8	430.00
923	1179095.2	2285138.9	437.66
924	1179091.7	2285158.6	437.66
925	1179137.5	2285118.7	440.40
926	1179155.1	2285128.2	440.00
927	1178512.5	2281768.6	459.30
928	1178390.6	2281816.6	478.98
929	1178371.8	2281824.0	478.00
930	1178293.5	2281854.4	498.98
931	1178274.8	2281861.9	498.01
932	1178196.5	2281892.2	518.99
933	1178177.7	2281899.7	518.01
934	1178099.5	2281930.1	538.99
935	1178080.7	2281937.5	538.01
936	1178028.5	2281957.5	552.00
937	1178019.0	2281960.7	552.00
938	1178017.1	2281961.4	551.50
939	1178732.1	2282315.7	458.52
940	1178713.3	2282323.1	457.52
941	1178635.2	2282354.0	478.52
942	1178616.4	2282361.4	477.52
943	1178494.6	2282409.8	497.24
944	1178416.4	2282440.2	518.22
945	1178397.6	2282447.6	517.25
946	1178319.3	2282478.0	538.23
947	1178300.5	2282485.5	537.25
948	1178247.2	2282511.0	552.00
949	1178238.1	2282515.1	552.00
950	1178234.5	2282511.6	551.50
951	1178979.2	2282992.4	463.24
952	1178960.5	2282999.8	462.24
953	1178882.3	2283030.5	483.24
954	1178863.5	2283037.9	482.24
955	1178784.8	2283067.8	503.29
956	1178766.1	2283075.2	502.29
957	1178686.9	2283103.7	523.38
958	1178668.2	2283111.1	522.38
959	1178591.8	2283144.5	543.23
960	1179340.7	2283958.4	467.94
961	1179322.0	2283965.8	466.94
962	1179243.8	2283996.8	487.97
963	1179225.1	2284004.5	486.97
964	1179146.9	2284035.0	507.98
965	1179128.2	2284042.8	506.98
966	1179011.7	2283926.3	523.45
967	1178993.0	2283933.7	522.45
968	1178903.5	2283920.4	542.04
969	1178884.8	2283927.8	541.04
970	1178823.0	2283890.7	552.00
971	1178813.7	2283894.3	552.00
972	1178810.9	2283893.9	551.38
973	1179507.6	2284266.3	457.43
974	1179509.6	2284300.1	456.31
975	1179490.0	2284275.8	456.18
976	1179491.0	2284292.7	455.53
977	1179364.2	2284200.9	478.74
978	1179367.3	2284235.0	477.31
979	1179346.9	2284211.1	477.51
980	1179346.4	2284233.8	476.00
981	1179241.7	2284195.3	500.66
982	1179245.9	2284226.0	499.02
983	1179224.5	2284205.5	499.66
984	1179226.6	2284220.8	497.91
985	1179153.6	2284188.0	514.51
986	1179155.6	2284221.8	513.39
987	1179136.0	2284197.6	513.31
988	1179137.0	2284214.4	512.51
989	1179045.2	2284181.4	533.07
990	1179047.2	2284215.3	531.95
991	1179027.6	2284190.9	532.01
992	1179028.7	2284207.9	531.15
993	1178936.6	2284178.0	552.00
994	1178927.3	2284181.7	552.00
995	1178912.6	2284184.9	548.30
996	1178911.7	2284193.4	548.20
997	1179283.0	2284705.6	457.73
998	1179265.3	2284696.0	456.73
999	1179125.7	2285032.8	453.23
1000	1179109.4	2285021.2	452.30

WORK POINT TABLE (FINAL COVER)

POINT #	NORTHING	EASTING	DESIGN ELEV.
1001	1179069.7	2285042.1	455.74
1002	1179081.4	2285025.9	454.25
1003	1179051.3	2284773.0	482.56
1004	1179003.6	2284787.0	482.53
1005	1179034.9	2284761.2	481.53
1006	1179011.1	2284768.2	481.51
1007	1179013.8	2284645.1	500.00
1008	1178966.4	2284659.1	499.97
1009	1178997.5	2284633.5	498.99
1010	1178973.8	2284640.5	498.98
1011	1178977.2	2284519.5	517.06
1012	1178929.6	2284533.4	517.04
1013	1178961.0	2284507.8	516.00
1014	1178937.1	2284514.9	515.98
1015	1178940.3	2284393.0	534.26
1016	1178892.6	2284407.4	534.10
1017	1178923.8	2284381.6	533.42
1018	1178900.0	2284388.8	533.50
1019	1178905.0	2284923.0	461.87
1020	1178914.8	2284905.4	460.87
1021	1178208.7	2284536.3	462.20
1022	1178218.4	2284518.6	461.20
1023	1178287.5	2284392.2	482.22
1024	1178297.3	2284374.6	481.22
1025	1178338.2	2284301.2	502.23
1026	1178348.0	2284283.6	501.23
1027	1178388.0	2284209.4	522.38
1028	1178397.8	2284191.8	521.38
1029	1178438.4	2284119.0	542.23
1030	1178448.1	2284101.3	541.23
1031	1178466.9	2284062.6	552.00
1032	1178473.0	2284054.5	552.00
1033	1178474.6	2284053.1	551.50
1034	1177406.7	2283815.8	469.91
1035	1177426.2	2283811.1	468.91
1036	1177551.6	2283754.1	488.64
1037	1177570.8	2283748.0	487.64
1038	1177632.8	2283683.2	506.91
1039	1177652.4	2283678.3	505.91
1040	1177725.7	2283639.2	525.93
1041	1177745.5	2283635.6	524.93
1042	1177817.4	2283578.7	544.52
1043	1177837.5	2283577.4	543.52
1044	1177875.0	2283509.3	552.00
1045	1177884.7	2283511.6	552.00
1046	1177885.8	2283517.0	551.52
1047	1177247.7	2282744.3	462.95
1048	1177265.6	2282735.1	461.95
1049	1177350.2	2282711.3	483.48
1050	1177368.1	2282702.2	482.48
1051	1177452.5	2282678.0	504.01
1052	1177470.4	2282668.8	503.01
1053	1177555.6	2282646.5	524.57
1054	1177573.5	2282637.3	523.57
1055	1177657.2	2282612.3	545.05
1056	1177674.1	2282601.6	544.00
1057	1177711.7	2282604.9	552.00
1058	1177720.7	2282600.5	552.00
1059	1177721.6	2282598.6	551.60
1060	1176845.0	2281948.6	464.00
1061	1176832.9	2281786.0	469.21
1062	1176863.7	2281941.7	463.00
1063	1176852.4	2281791.0	468.21
1064	1176924.9	2281866.5	485.10
1065	1176924.7	2281809.4	486.85
1066	1176943.6	2281859.6	484.10
1067	1176944.2	2281814.2	485.85
1068	1177029.3	2281853.3	503.76
1069	1177036.5	2281813.2	503.74
1070	1177048.0	2281846.3	502.75
1071	1177051.6	2281826.3	502.74
1072	1177147.1	2281874.4	521.64
1073	1177153.8	2281835.0	521.51
1074	1177165.8	2281867.4	520.84
1075	1177169.2	2281847.7	520.69
1076	1177262.7	2281895.7	538.91
1077	1177269.5	2281855.7	538.79
1078	1177280.8	2281888.9	537.70
1079	1177284.3	2281868.6	537.63
1080	1177356.3	2281910.8	552.00
1081	1177362.8	2281874.9	552.00
1082	1177365.2	2281906.2	552.00
1083	1177369.5	2281882.3	552.00
1084	1177372.1	2281901.6	549.94
1085	1177374.5	2281889.1	549.91
1086	1176876.3	2281690.0	466.08
1087	1176891.4	2281703.1	465.08
1088	1176944.4	2281765.4	485.45
1089	1176959.6	2281778.4	484.45
1090	1177519.5	2281220.3	459.01
1091	1177526.1	2281239.3	458.01
1092	1177554.5	2281315.9	478.41
1093	1177561.1	2281334.9	477.41
1094	1177590.2	2281411.3	497.85
1095	1177596.9	2281430.3	496.85
1096	1177623.9	2281507.1	517.25
1097	1177630.5	2281526.1	516.25
1098	1177659.4	2281602.2	536.62
1099	1177666.1	2281621.2	535.62
1100	1177707.0	2281676.3	552.00

WORK POINT TABLE (FINAL COVER)

POINT #	NORTHING	EASTING	DESIGN ELEV.
1101	1177709.9	2281685.9	552.00
1102	1177714.7	2281691.9	550.17
1103	1178038.9	2283799.6	548.78
1104	1178028.3	2283808.4	552.00
1105	1178023.4	2283817.2	552.00
1106	1177964.8	2283870.9	533.00
1107	1177952.0	2283886.2	534.00
1108	1177936.8	2283979.2	512.16
1109	1177925.1	2283995.4	513.16
1110	1177886.4	2284069.9	492.19
1111	1177874.7	2284086.1	493.19
1112	1177835.9	2284161.1	472.17
1113	1177824.2	2284177.3	473.17
1114	1177696.2	2284261.0	454.45
1115	1177684.5	2284277.2	455.45
1116	1177373.4	2283556.5	462.00
1117	1177393.3	2283558.0	461.00
1118	1177492.6	2283444.9	479.11
1119	1177512.5	2283445.8	478.11
1120	1177599.5	2283458.3	500.00
1121	1177619.5	2283459.1	499.00
1122	1177705.6	2283480.7	521.10
1123	1177725.6	2283480.0	520.00
1124	1177813.6	2283427.7	540.00
1125	1177833.6	2283427.6	539.00
1126	1176371.4	2282185.6	445.00
1127	1176157.8	2282004.2	446.00
1128	1176140.0	2282028.3	445.40
1129	1176049.8	2281892.2	446.00
1130	1176025.1	2281909.2	445.40
1131	1176195.8	2281952.9	424.75
1132	1176082.3	2281833.5	426.00
1133	1176019.1	2281750.5	426.80
1134	1175973.8	2281781.6	445.11
1135	1175949.1	2281798.6	444.51
1136	1175857.8	2281595.9	428.82
1137	1175751.3	2281486.5	430.22
1138	1175725.8	2281509.8	441.76
1139	1175703.6	2281530.0	441.16
1140	1175829.5	2281623.5	442.00
1141	1175807.7	2281644.1	441.40
1142	1178530.1	2281653.7	450.02
1143	1178558.0	2281648.2	443.00
1144	1178566.3	2281642.2	443.00
1145	1175600.0	2281390.9	432.00
1146	1175622.0	2281431.5	441.55
1147	1175608.6	2281458.4	440.95
1148	1175611.9	2281472.6	437.26
1149	1175696.2	2281536.8	437.79
1150	1175824.6	2281669.7	440.00
1151	1175554.6	2281447.7	437.57
1152	1175462.9	2281428.7	438.24
1153	1175494.2	2281426.1	440.75
1154	1175496.9	2281396.2	441.35
1155	1175499.1	2281371.3	433.00
1156	1175446.3	2281358.5	433.53
1157	1175436.1	2281379.2	441.25
1158	1175422.9	2281406.2	440.65
1159	1175284.9	2281280.3	435.32
1160	1175262.9	2281285.3	440.94
1161	1175245.0	2281309.3	440.34
1162	1175380.3	2281389.6	439.27
1163	1175223.7	2281297.9	438.96
1164	1175133.0	2281212.3	436.73
1165	1175158.8	2281228.6	440.16
1166	1175111.5	2281120.5	440.00
1167	1175105.0	2281121.0	439.00
1168	1175141.4	2281118.2	440.60
1169	1175151.5	2281117.4	437.23
1170	1175134.7	2280996.3	437.67
1171	1175225.9	2280938.6	440.95
1172	1175222.2	2280929.3	438.23
1173	1175236.7	2280966.6	441.55
1174	1175241.5	2280978.9	437.13
1175	1175312.6	2280905.0	441.40
1176	1175322.7	2280933.2	442.00
1177	1175328.0	2280948.6	436.58
1178	1175310.7	2280899.6	439.50
1179	1175392.4	2280861.9	443.50
1180	1175411.0	2280885.5	444.10
1181	1175425.9	2280904.5	436.05
1182	1175180.8	2281208.2	440.76
1183	1178645.3	2283947.9	558.52
1184	1178253.4	2283451.1	567.83
1185	1178011.4	2282605.5	562.00
1186	1177923.6	2282487.2	562.00
1187	1177788.9	2282042.9	562.76
1188	1177755.1	2281991.1	562.55
1189	1177863.4	2285027.8	446.00
1190	1177790.1	2284988.8	446.00
1191	1177726.1	2285008.8	445.61
1192	1177790.1	2285063.6	408.33
1193	1177801.4	2285069.6	408.33
1194	1177753.5	2285114.0	408.00
1195	1177780.2	2285127.8	408.00
1196	1177046.9	2283857.2	410.88
1197	1177060.1	2283920.5	410.66
1198	1179109.5	2285419.9	424.00
1199	1179119.5	2285399.6	424.00
1200	1179059.9	2285436.2	414.74

WORK POINT TABLE (FINAL COVER)

POINT #	NORTHING	EASTING	DESIGN ELEV.
1201	1179048.7	2285406.7	414.70
1202	1179039.1	2285401.5	414.66
1203	1179080.5	2285395.3	420.74
1204	1179005.0	2285464.9	414.47
1205	1177635.5	2284708.2	0.00
1206	1177660.6	2284721.7	0.00
1207	1179584.5	2284558.2	0.00
1208	1179568.9	2284588.4	0.00
1209	1179771.8	2284562.6	0.00
1210	1179799.3	2284574.5	0.00
1211	1179668.0	2284803.2	0.00
1212	1179695.6	2284815.1	0.00
1213	1179358.0	2285021.9	0.00
1214	1179346.6	2285045.7	0.00
1215	1178367.8	2285116.1	0.00
1216	1178342.0	2285101.4	0.00

NOTES:

1. WORK POINTS ARE PROVIDED FOR CONVENIENCE AND DESIGN REFERENCE ONLY FOR CERTAIN CONSTRUCTION ELEMENTS AND BREAKS IN GRADE AND DO NOT REPRESENT A COMPREHENSIVE POINT LIST FOR CONSTRUCTION STAKING.
2. THE CONTRACTOR MAY USE THESE WORK POINTS, AUTOCAD CIVIL 3D DATA, DESIGN DRAWINGS AND DETAILS AND SPECIFICATIONS FOR CONSTRUCTION OF THE ASH POND CLOSURE.
3. CONTRACTOR SHALL NOTIFY THE OWNER AND DESIGN ENGINEER AS SOON AS POSSIBLE WITH ANY DISCREPANCIES FOUND IN THE CONSTRUCTION DOCUMENTS COMPARED WITH FIELD CONDITIONS.

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED No. 25997 PROFESSIONAL ENGINEER GILBERT M. HAINES

05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

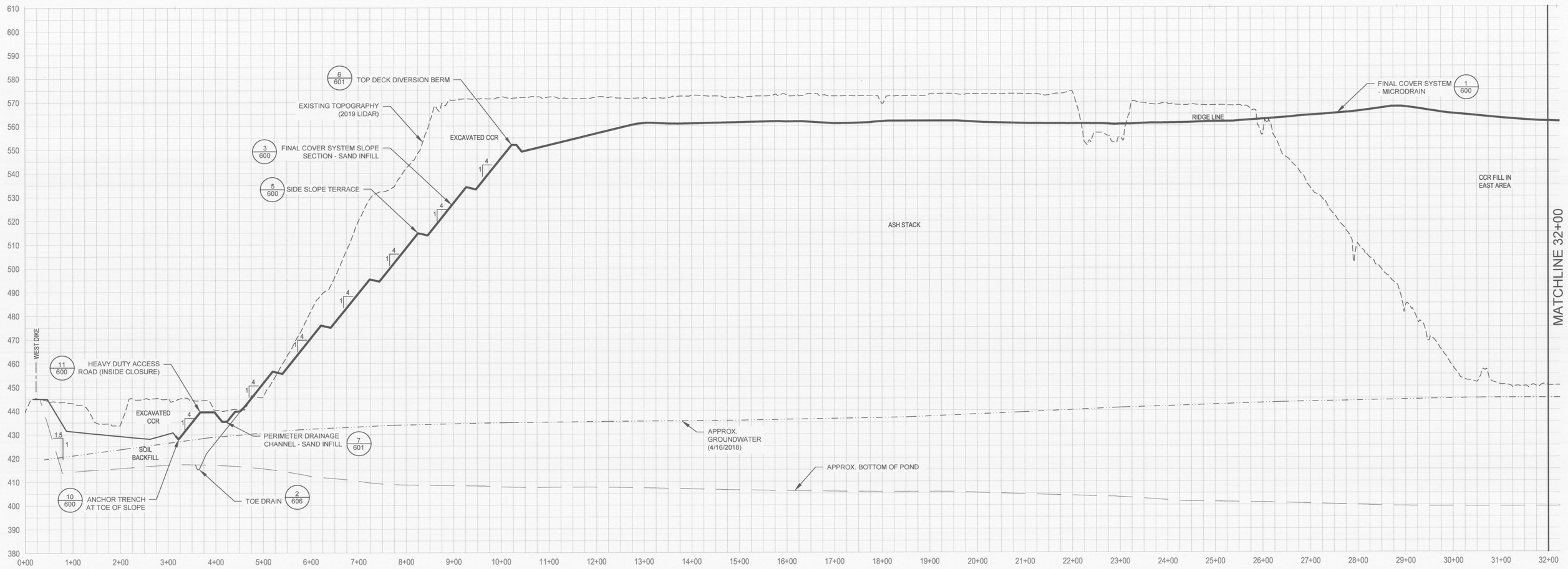
REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J.ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

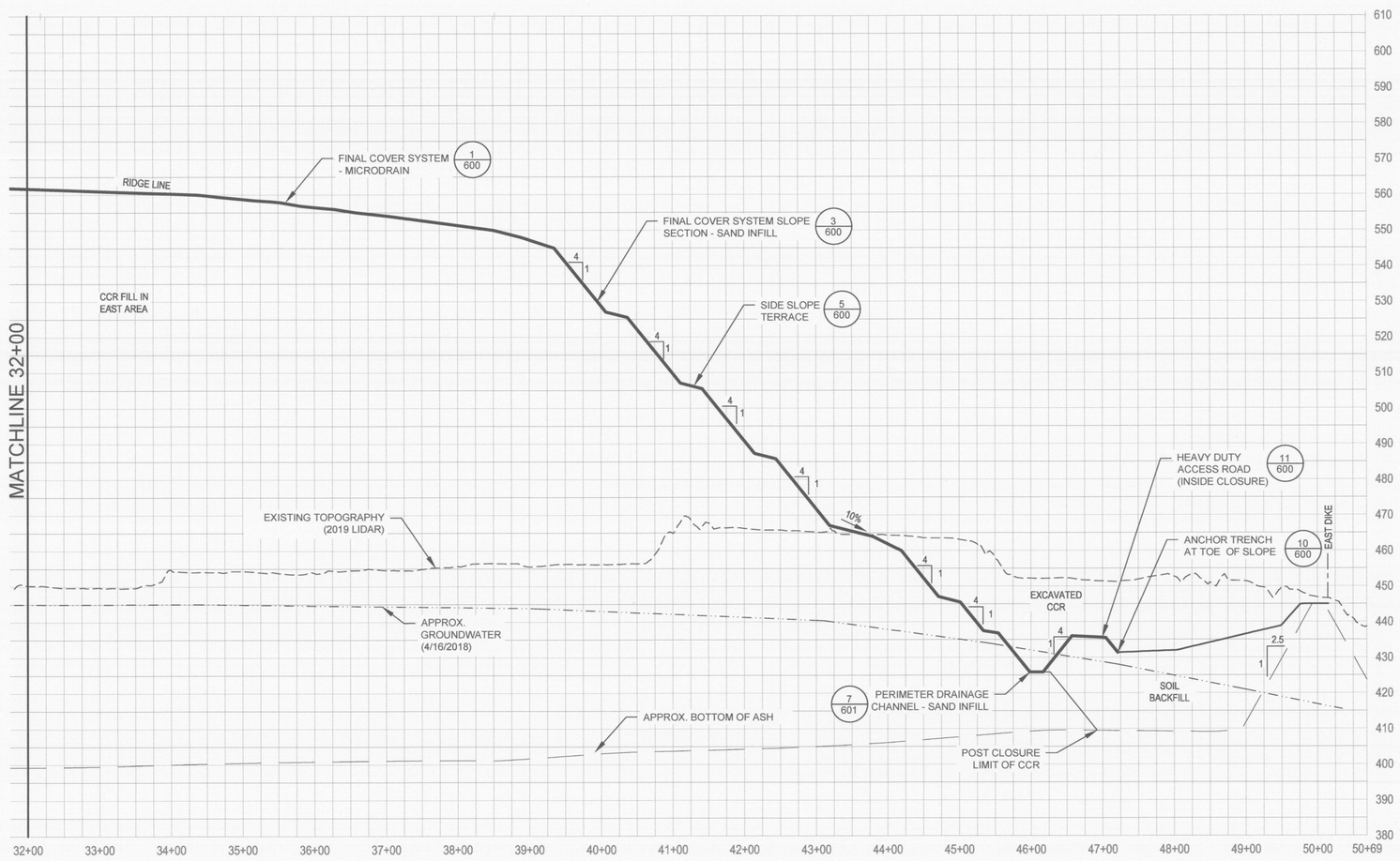
SHEET TITLE:

FINAL CLOSURE WORK POINTS

SHEET NUMBER:	REV. #
GAS_3.2.4_410	0



A 500 PROFILE - A 0+00 - 32+00



A 500 PROFILE - A 32+00 - 51+00

HORIZONTAL 100 0 100 200 FT

VERTICAL 20 0 20 40 FT

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER GILBERT M. HAINES No. 25907

05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No: 6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

PROFILE A

SHEET NUMBER:	REV. #
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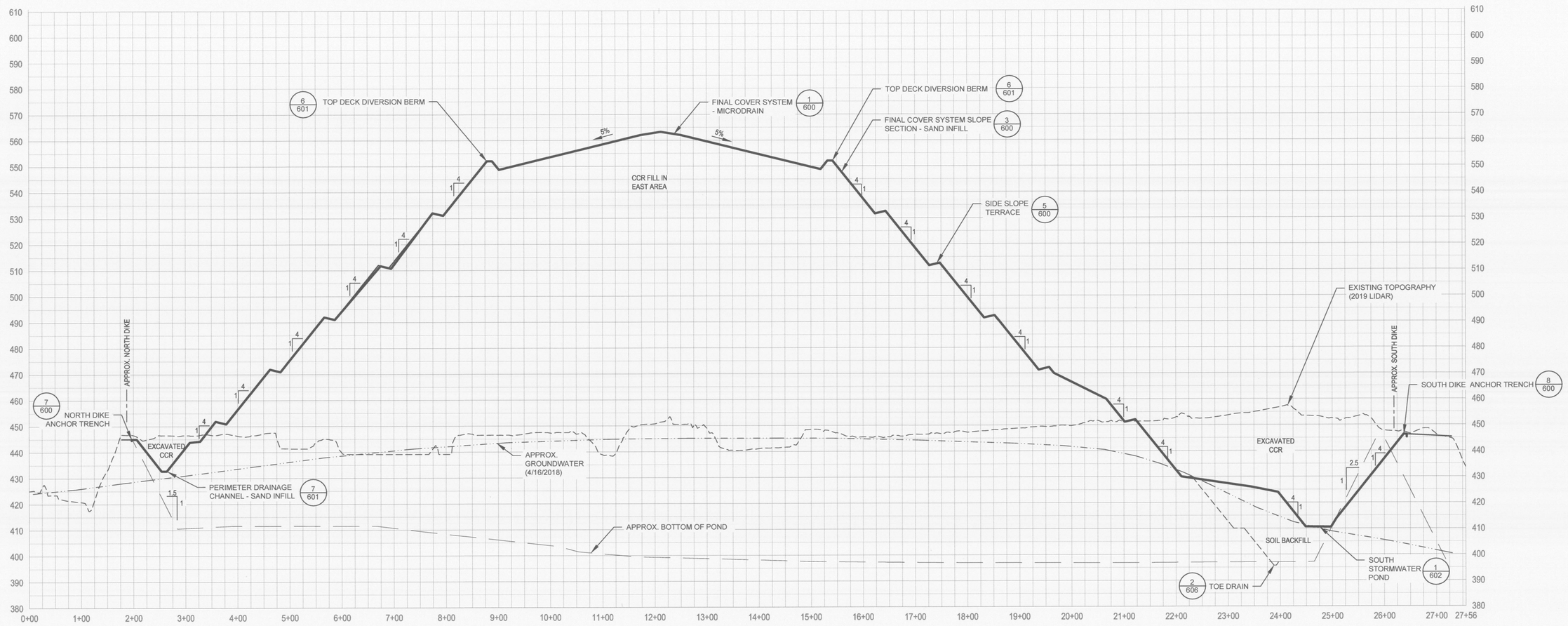
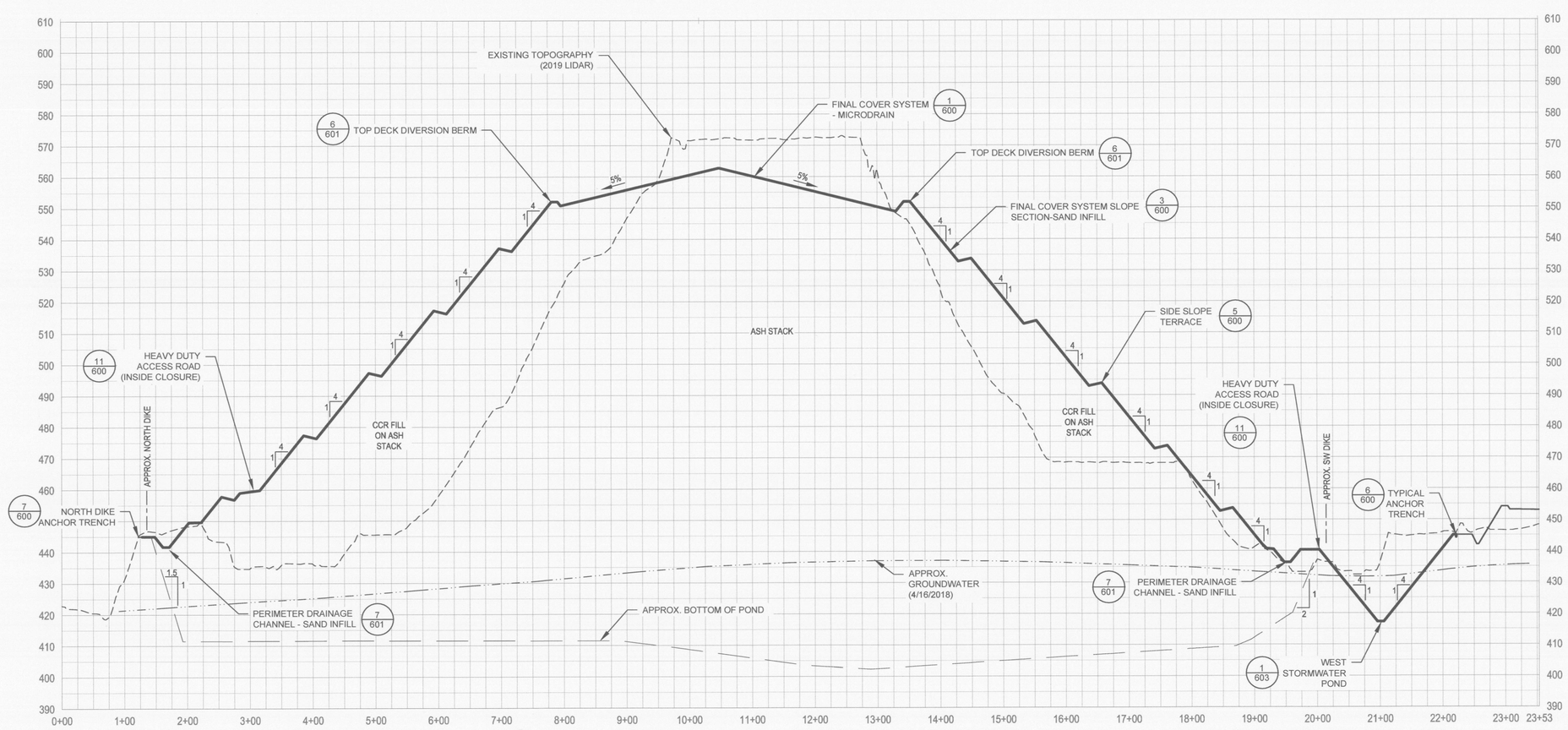


B/501 PROFILE - B



C/501 PROFILE - C

HORIZONTAL 100 0 100 200 FT

VERTICAL 20 0 20 40 FT

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 25507 GILBERT M. HAINES
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No: 6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

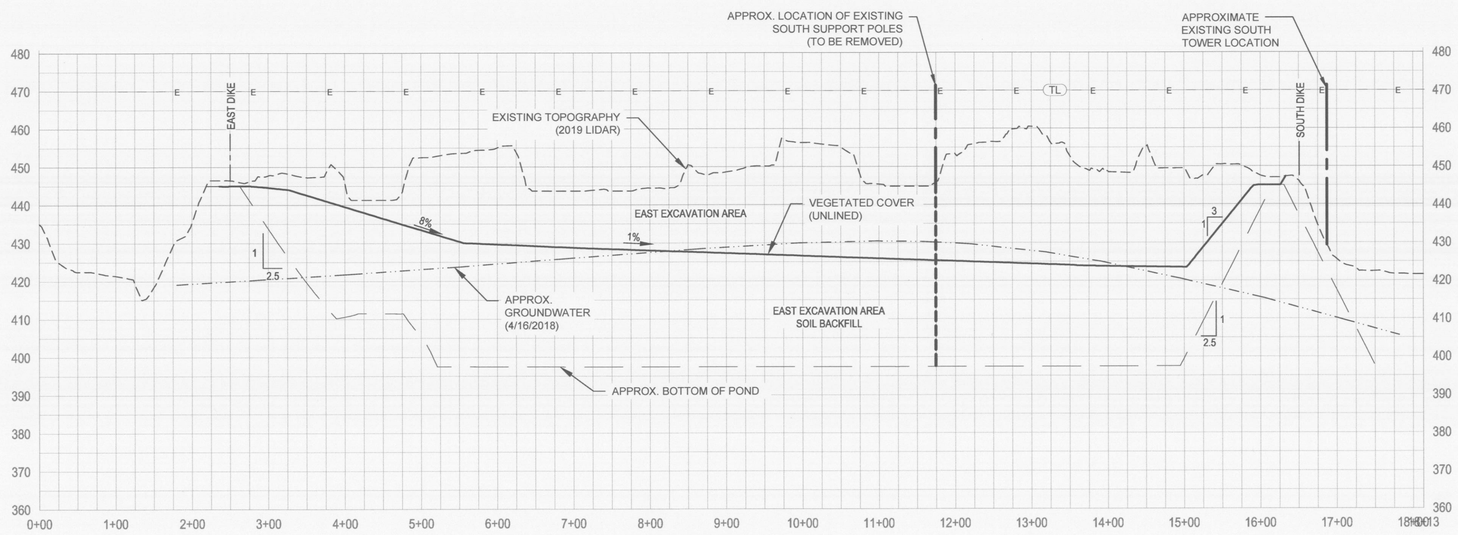
DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

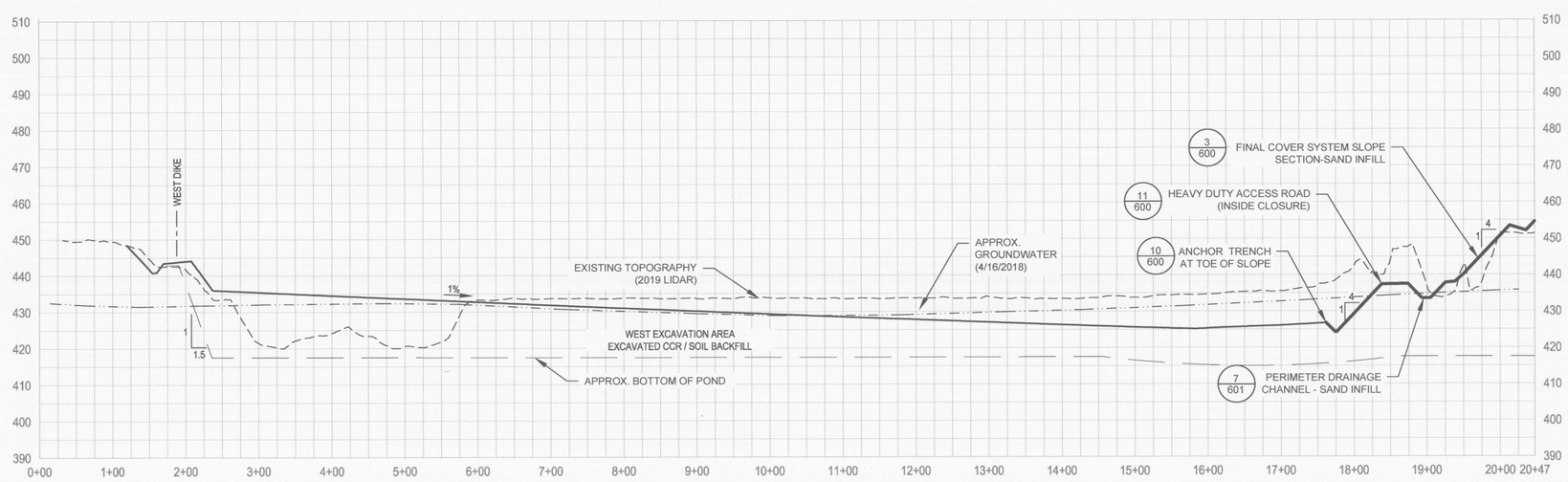
PROFILE B & C

SHEET NUMBER:	REV. #
GAS_3.2.4_501	0

J:\6166-18-0770 SCS GASTON APCD DETAILED ENGINEERING\SHEET SET - APCD DETAILED ENGINEERING\GAS_3.2.4_500.dwg - 501 PROFILE B & C 05/29/2019 2:52pm jesse.aldridge



D 502 PROFILE - D



E 502 PROFILE - E

PROPOSED TRANSMISSION LINE MINIMUM DESIGN SAG HEIGHT

GASTON - FAYETTEVILLE 230 kV & GASTON - GOAT ROCK #2 23OkV
STR. 3A - 4: ELEV. 503.44 FT.
STR. 4 - 5: ELEV. 503.14 FT.
STR. 5 - 6: ELEV. 472.36 FT.

GASTON - GOAT ROCK #1 230 kV & GASTON - YELLOW DIRT (CTC) 230kV
STR. 3 - 3A: ELEV. 505.49 FT.
STR. 3A - 5: ELEV. 499.81 FT.
STR. 5 - 6: ELEV. 470.76 FT.

HORIZONTAL
100 0 100 200 FT

VERTICAL
20 0 20 40 FT

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER GILBERT M. HAINES No. 25937
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

PROFILE D & E

SHEET NUMBER:	REV. #
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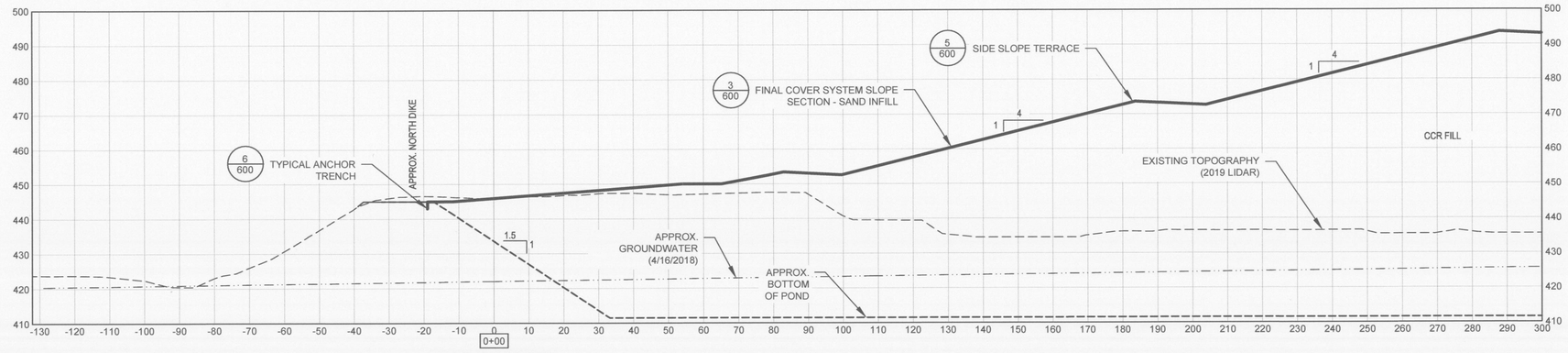
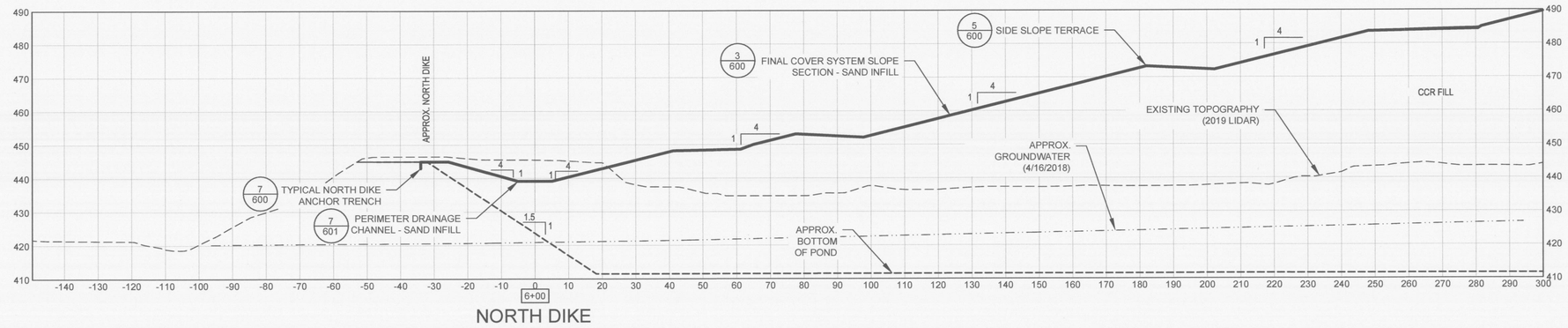
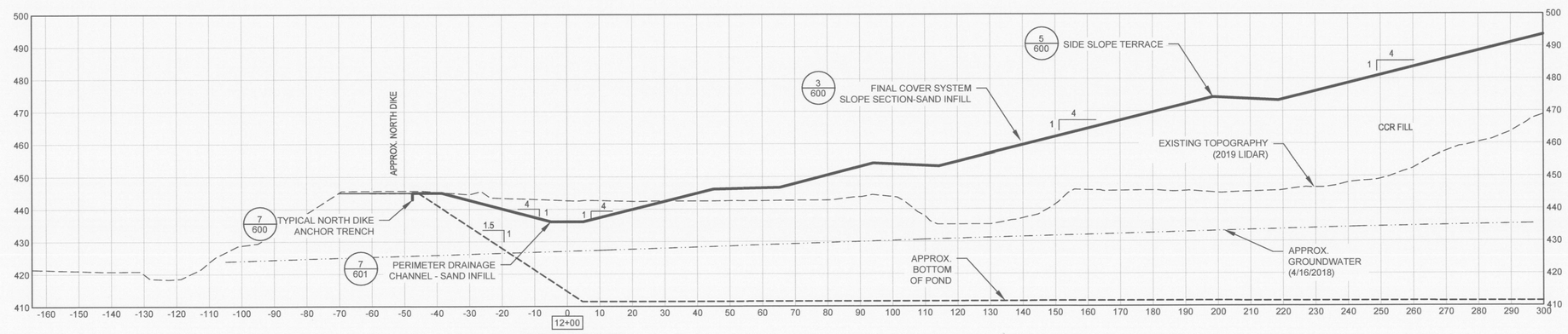


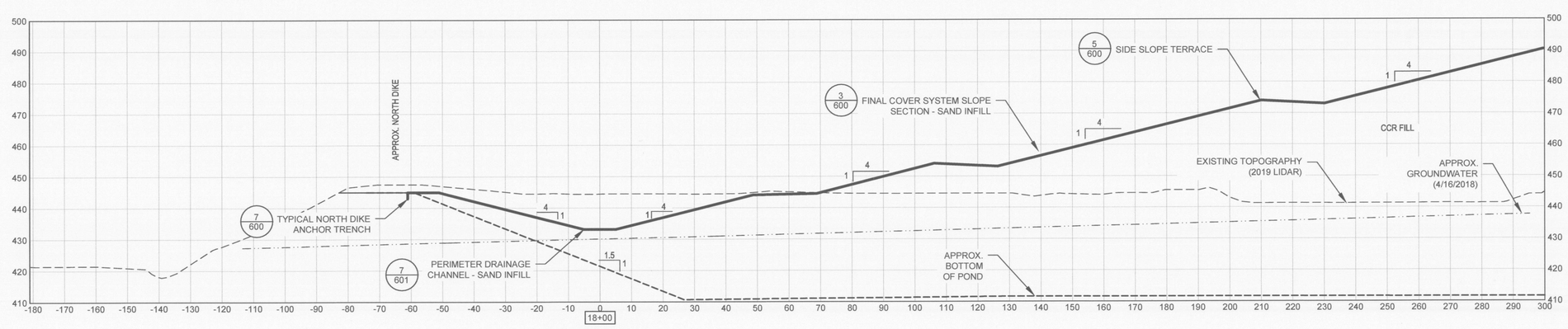
NORTH DIKE



NORTH DIKE



NORTH DIKE



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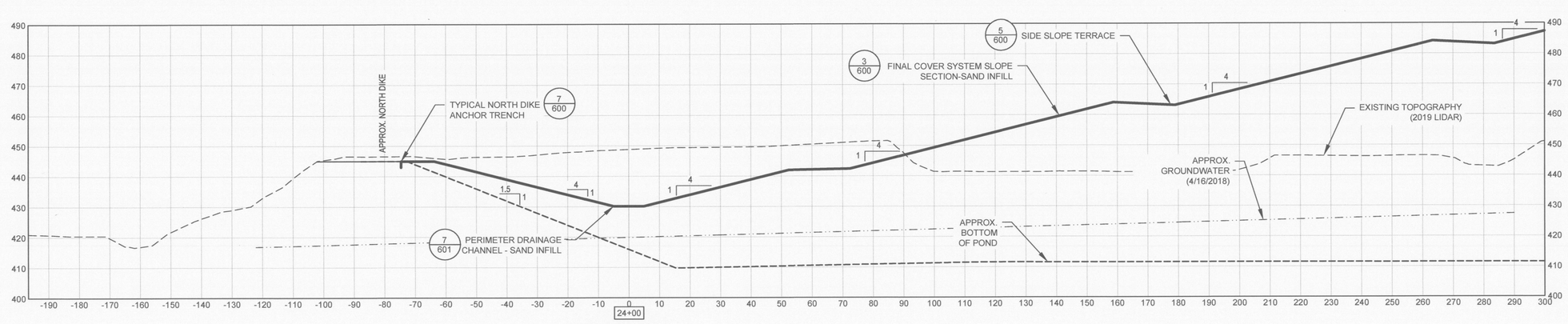

NORTH DIKE

HORIZONTAL 20 0 20 40 FT

VERTICAL 20 0 20 40 FT

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 25997 GILBERT M. HAINES

05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No: 6166-18-0770

REVISIONS

NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

CROSS SECTIONS 0+00 TO 24+00

SHEET NUMBER:	REV. #
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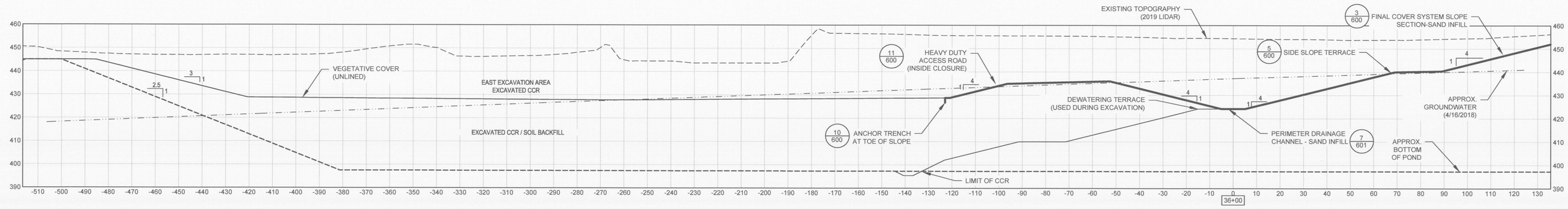
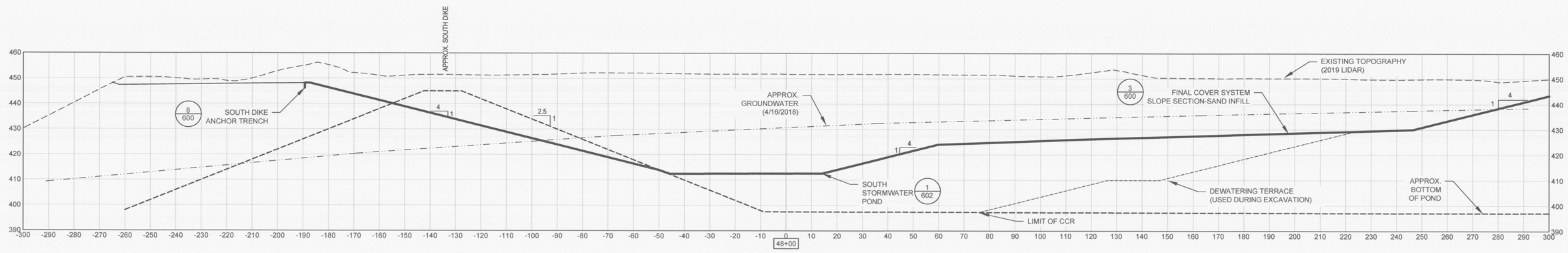
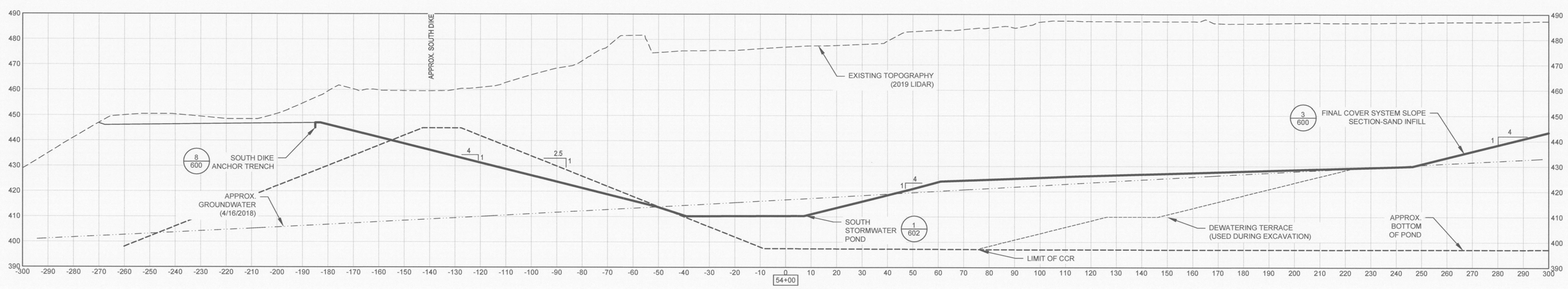


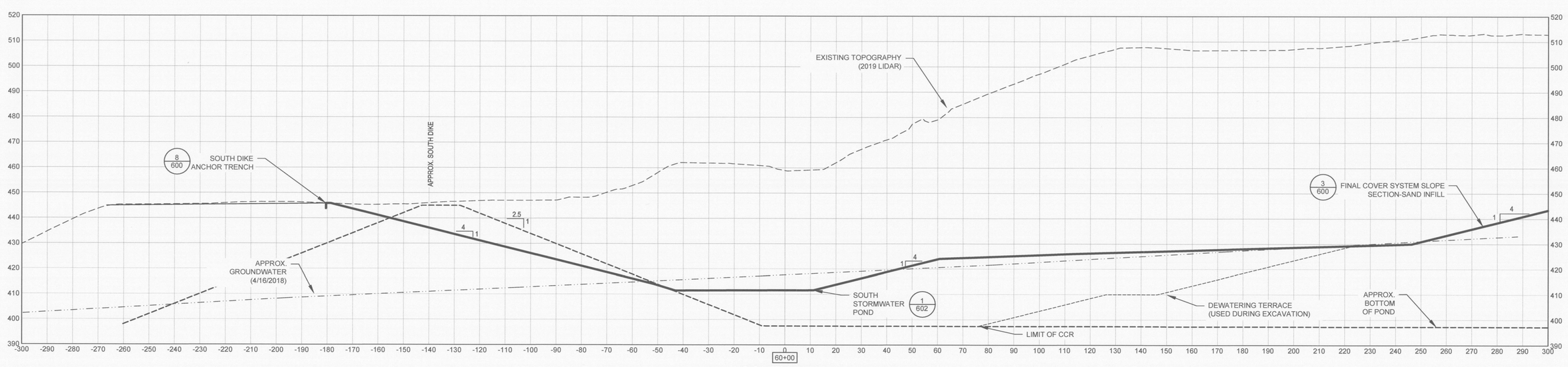
EAST DIKE



SOUTH DIKE



SOUTH DIKE



SOUTH DIKE

HORIZONTAL 20 0 20 40 FT

VERTICAL 20 0 20 40 FT

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED No. 25587 PROFESSIONAL ENGINEER GILBERT M. HAINES

05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

REVISIONS

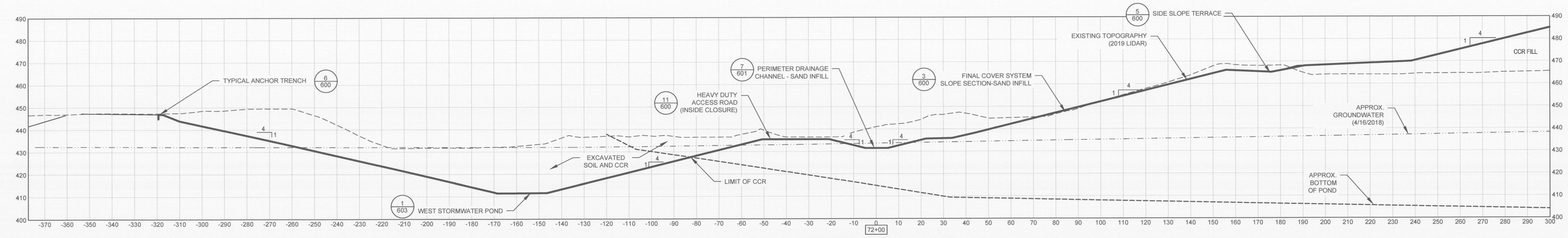
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

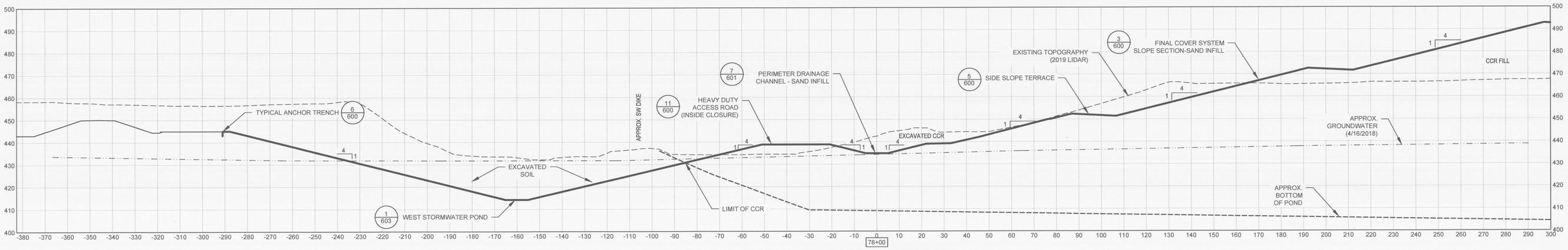
SHEET TITLE:

CROSS SECTIONS
36+00 TO 60+00

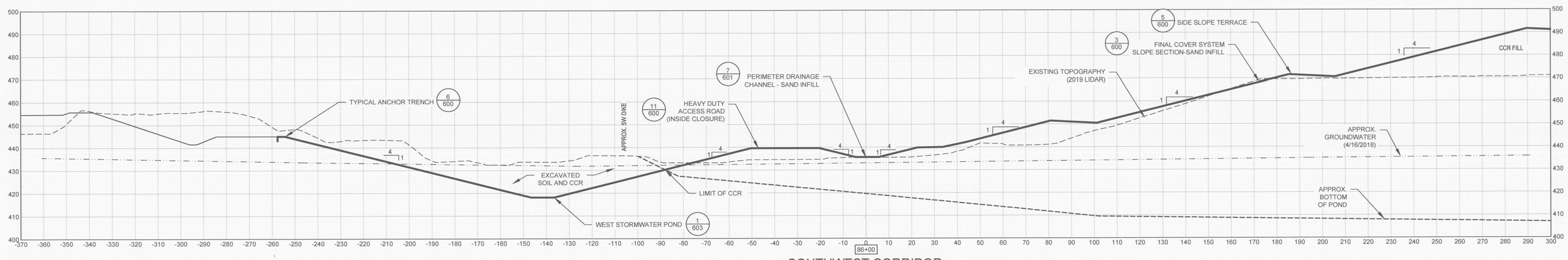
SHEET NUMBER:	REV. #
GAS_3.2.4_504	0



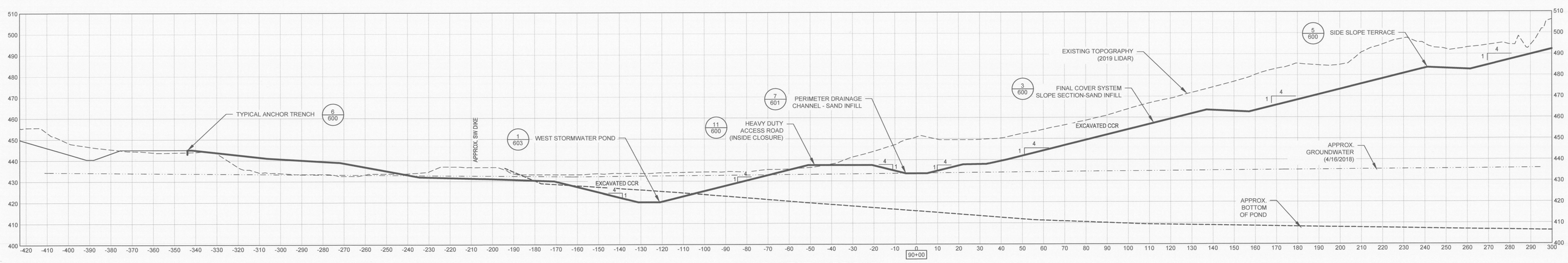
SOUTHWEST CORRIDOR



SOUTHWEST CORRIDOR



SOUTHWEST CORRIDOR



SOUTHWEST CORRIDOR

HORIZONTAL 20 0 20 40 FT

VERTICAL 20 0 20 40 FT

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED No. 25987 PROFESSIONAL ENGINEER GILBERT M. HAINES

05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No: 6166-18-0770

REVISIONS

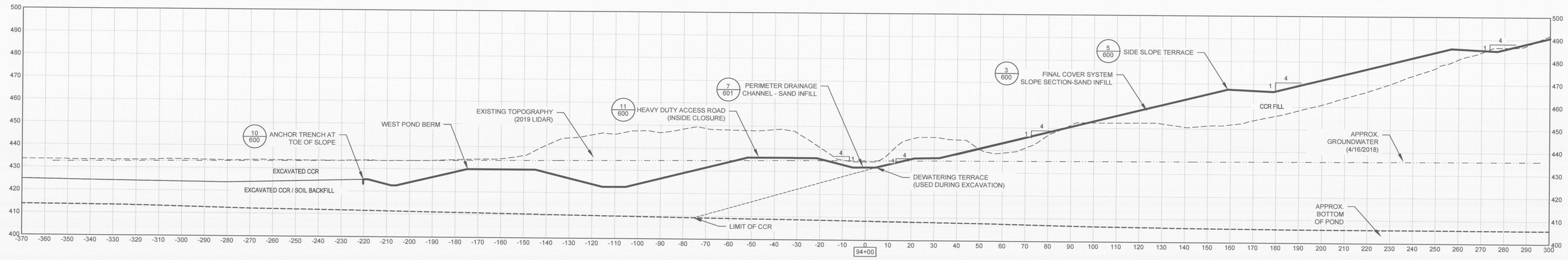
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

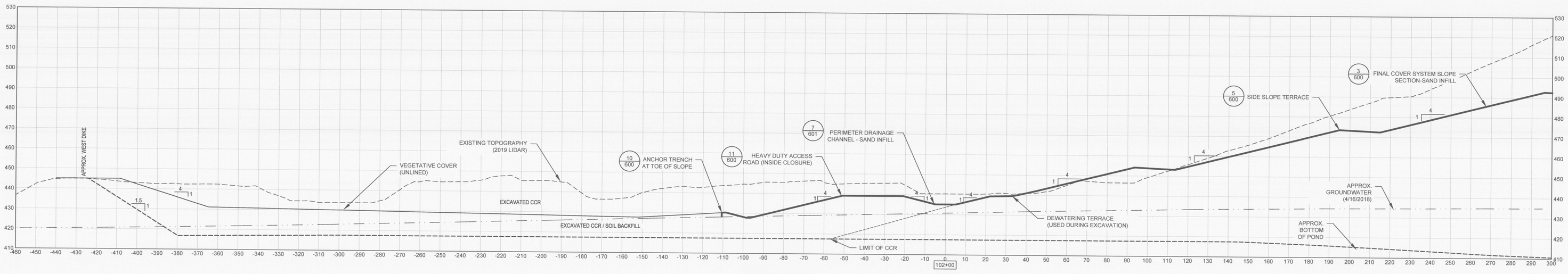
SHEET TITLE:

CROSS SECTIONS 72+00 TO 90+00

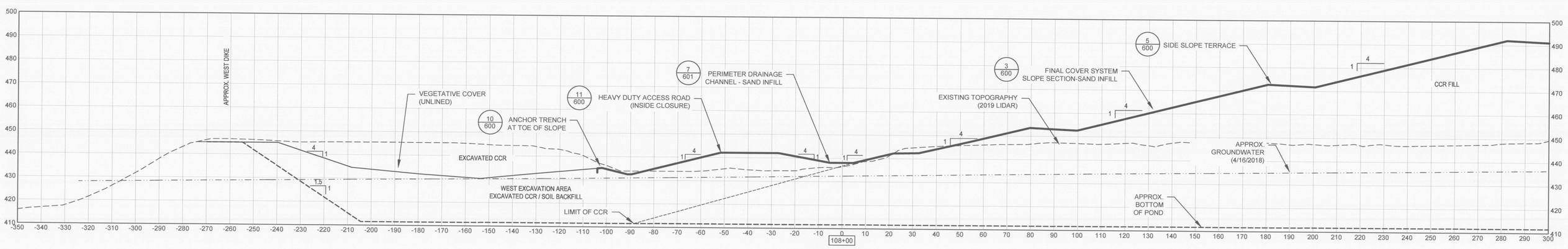
SHEET NUMBER:	REV. #
GAS_3.2.4_505	0



WEST AREA



WEST AREA



WEST AREA

HORIZONTAL 20 0 20 40 FT

VERTICAL 20 0 20 40 FT

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 25087 GILBERT M. HAINES

05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No: 6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

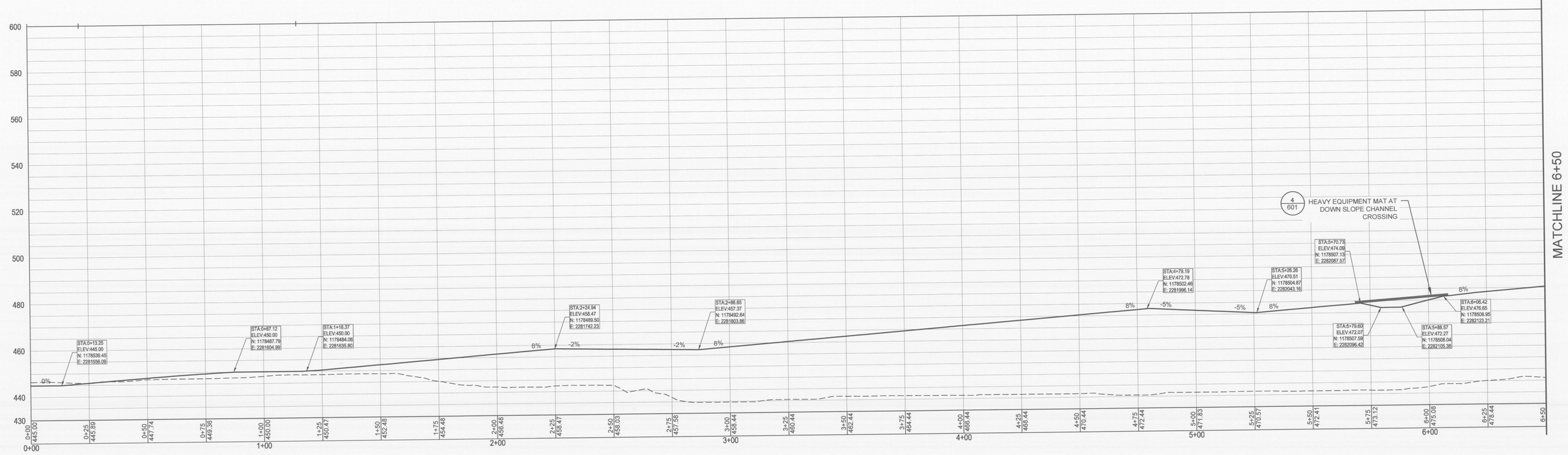
DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

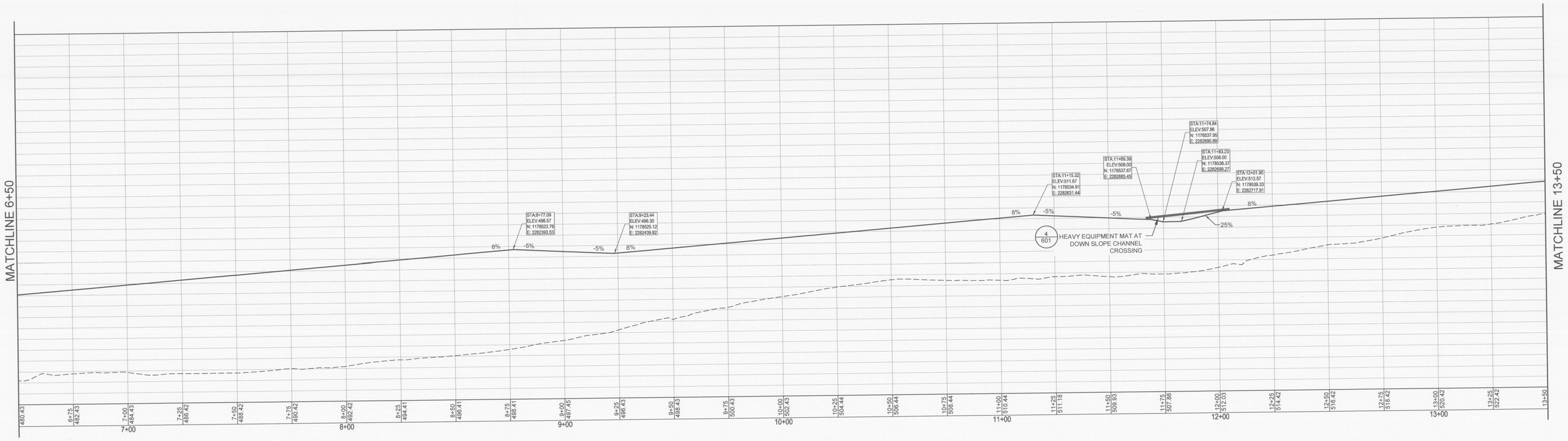
SHEET TITLE:

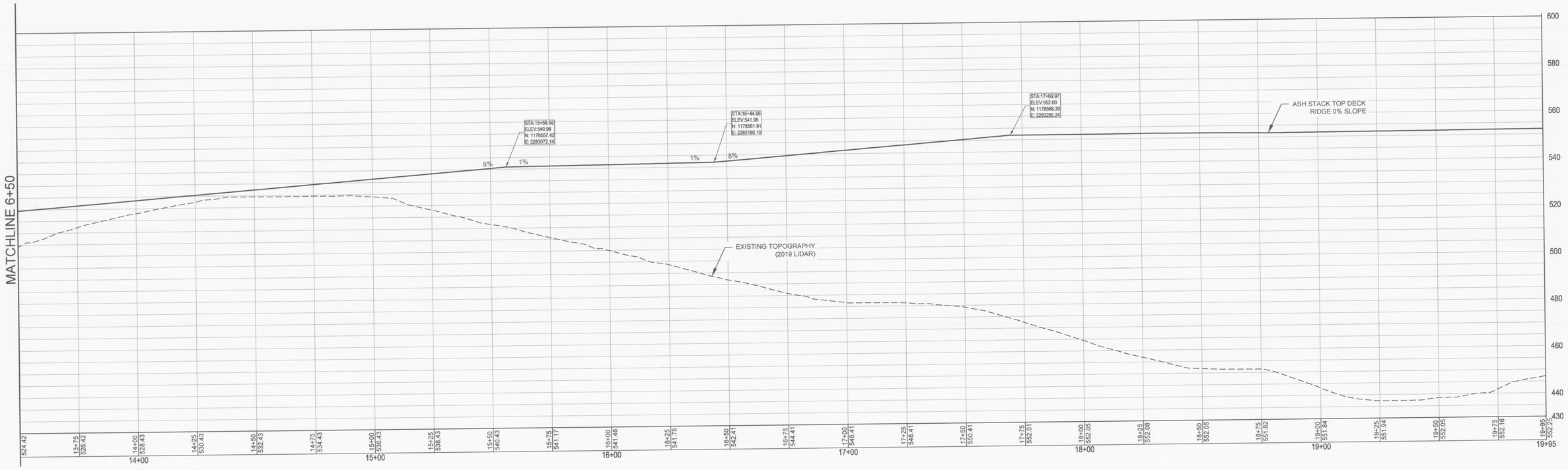
CROSS SECTIONS 96+00 TO 108+00

SHEET NUMBER:	REV.
GAS_3.2.4_506	0

J:\6166-18-0770 SCS GASTON APCD DETAILED ENGINEERING\SHEET SET - APCD DETAILED ENGINEERING\GAS_3.2.4_500.dwg - 506 CROSS SECTIONS 96+00 TO 108+00 05/29/2019 2:53pm jesse.aldridge







F 507 PROFILE - ASH STACK ACCESS ROAD

HORIZONTAL 20 0 20 40 FT

VERTICAL 20 0 20 40 FT

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 23597 GILBERT M. HAINES

05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No: 6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

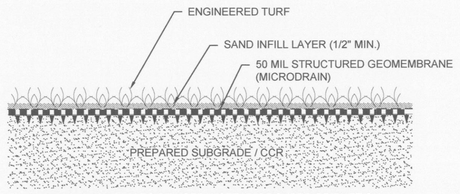
DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

PROFILE ASH STACK ACCESS ROAD

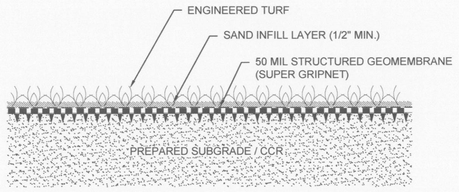
SHEET NUMBER:	REV. #
GAS_3.2.4_507	0

J:\6166-18-0770 SCS GASTON APCD DETAILED ENGINEERING\SHEET SET - APCD DETAILED ENGINEERING\GAS_3.2.4_500.dwg - 507 PROFILE ASH STACK ACCESS ROAD 05/29/2019 2:53pm jesse.aldridge

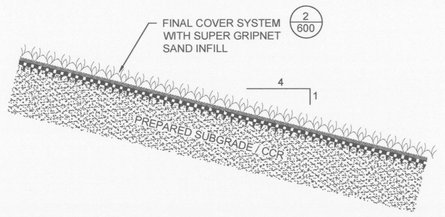


NOTE: MICRODRAIN TO BE USED INSTEAD OF SUPER GRIPNET ON TOP OF ASH STACK (TOP DECK) WHERE SLOPES ARE 5%

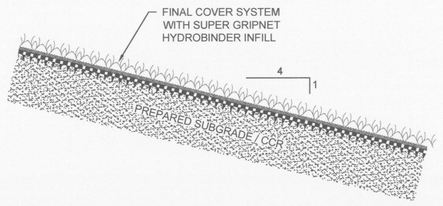
1/600 FINAL COVER SYSTEM - MICRODRAIN
NTS



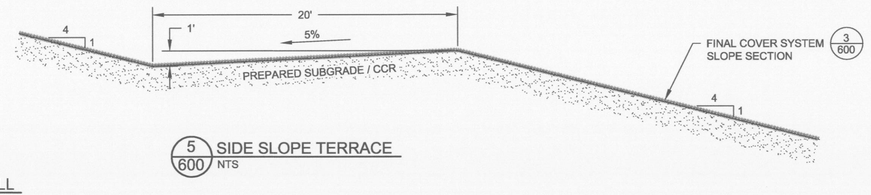
2/600 FINAL COVER SYSTEM - SUPER GRIPNET
NTS



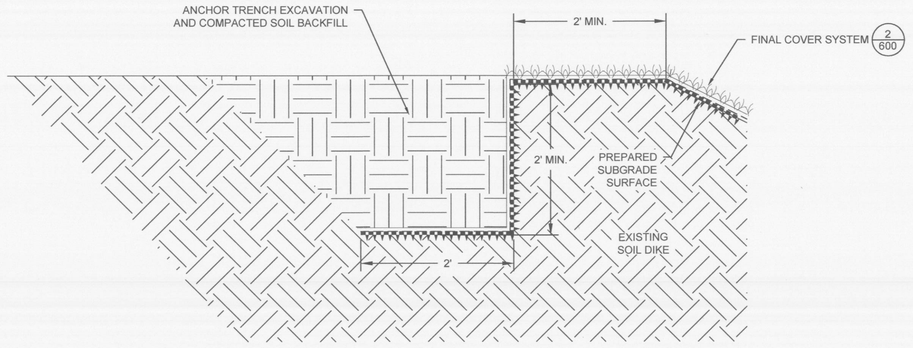
3/600 FINAL COVER SYSTEM SLOPE SECTION - SAND INFILL
NTS



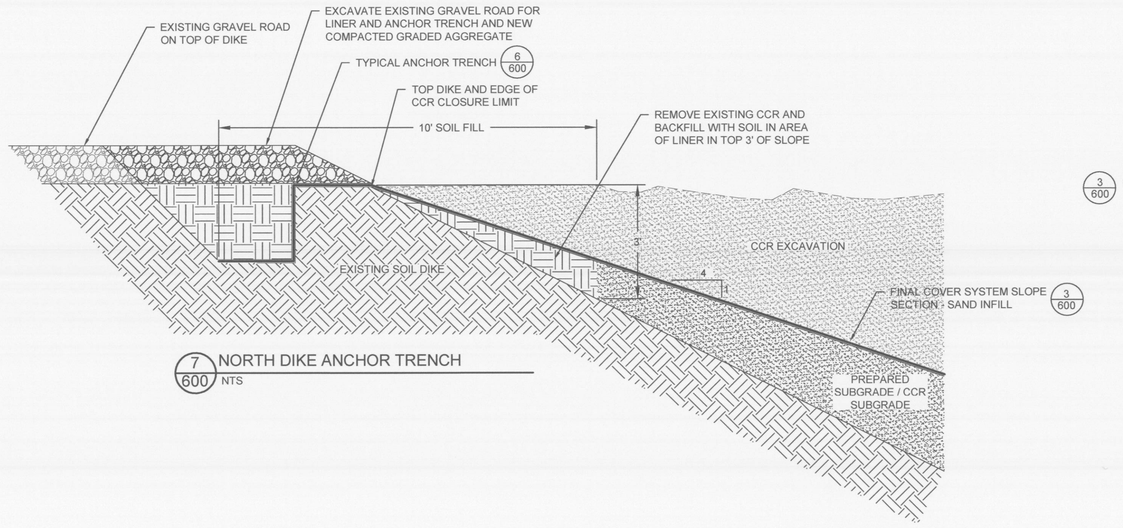
4/600 FINAL COVER SYSTEM SLOPE SECTION - HYDROBINDER INFILL
NTS



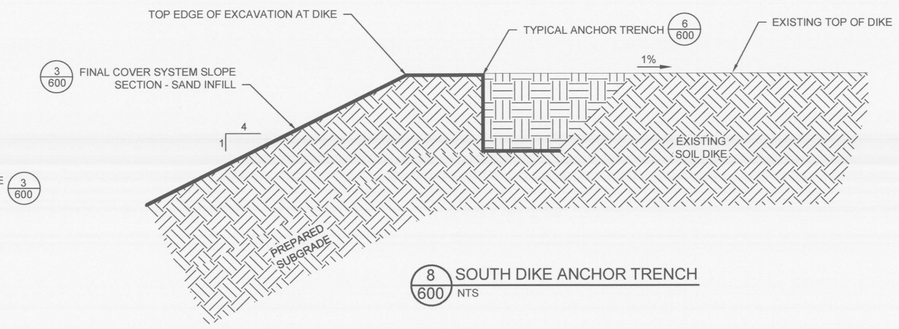
5/600 SIDE SLOPE TERRACE
NTS



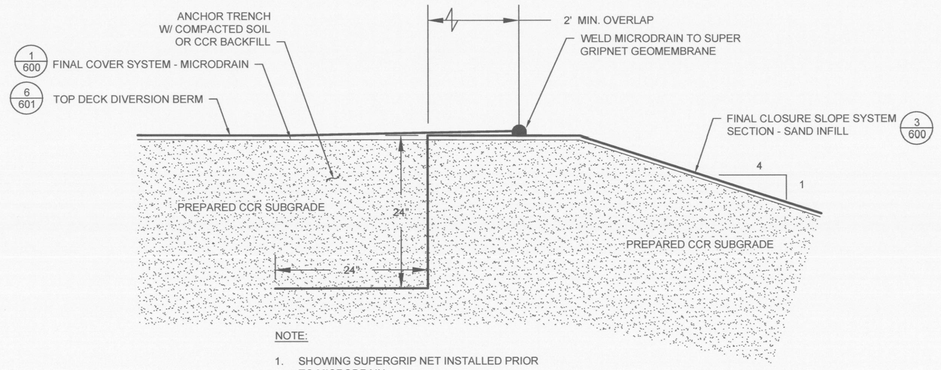
6/600 TYPICAL ANCHOR TRENCH
NTS



7/600 NORTH DIKE ANCHOR TRENCH
NTS



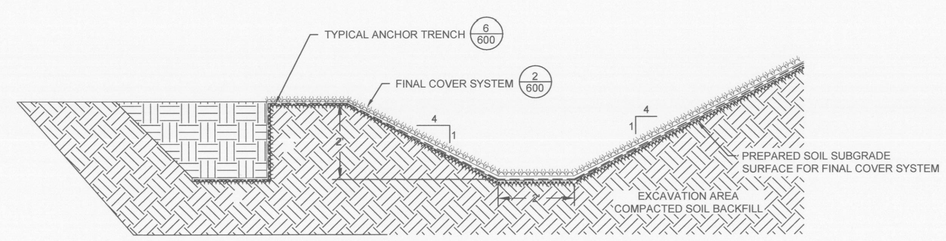
8/600 SOUTH DIKE ANCHOR TRENCH
NTS



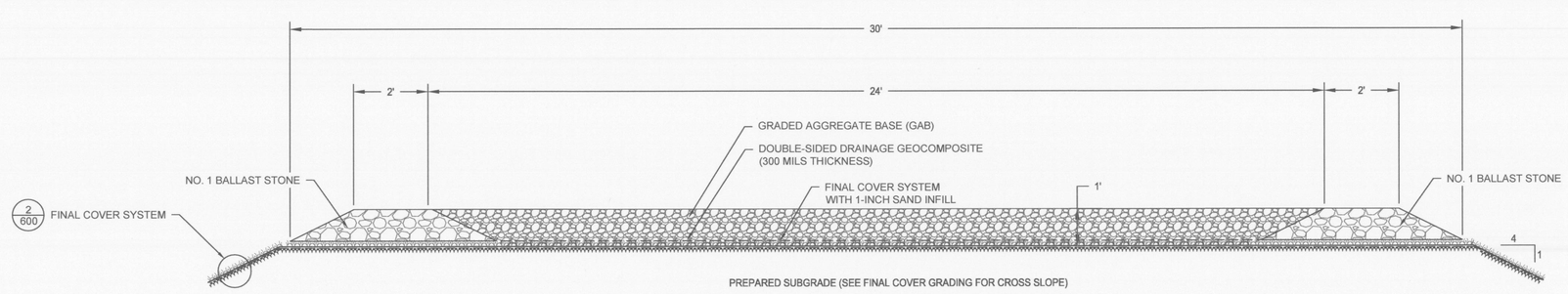
NOTE:

1. SHOWING SUPERGRIP NET INSTALLED PRIOR TO MICRODRAIN

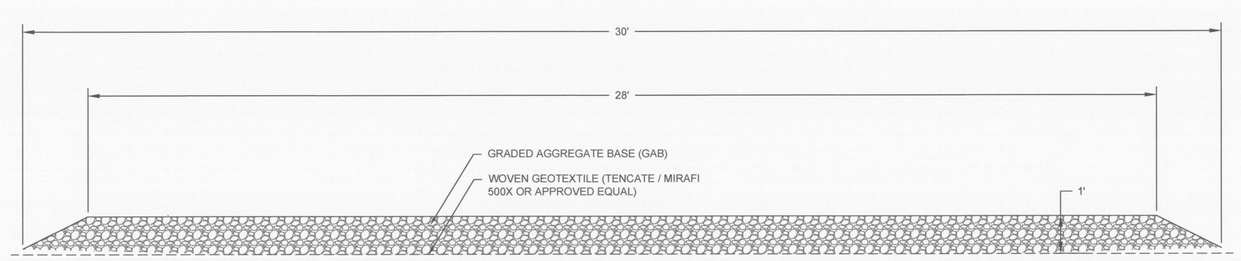
9/600 TOP DECK DIVERSION BERM ANCHOR
NTS



10/600 ANCHOR TRENCH AT TOE OF SLOPE
NTS



11/600 HEAVY DUTY ACCESS ROAD (INSIDE CLOSURE)
NTS



12/600 HEAVY DUTY ACCESS ROAD (OUTSIDE CLOSURE)
NTS

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER GILBERT M. HAINES NO. 25987
05/29/19

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PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

REVISIONS			
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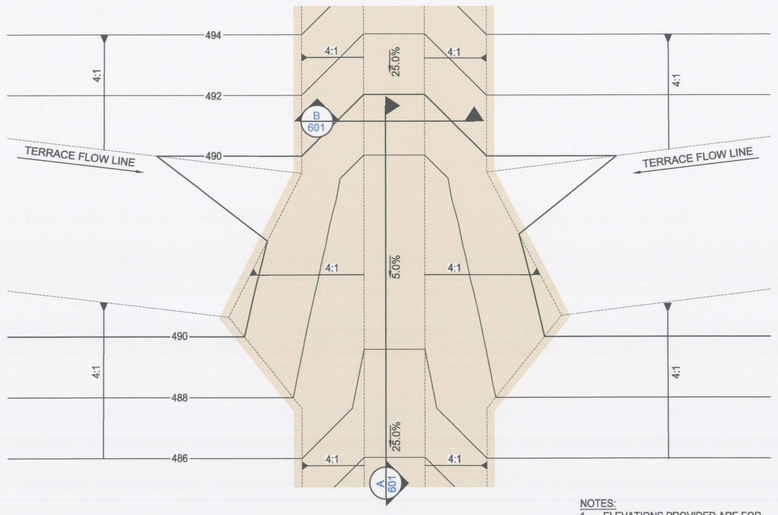
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

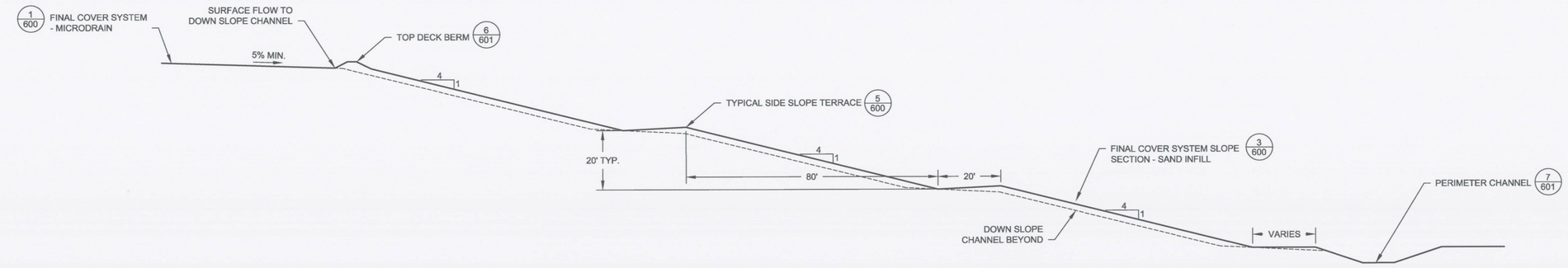
CONSTRUCTION DETAILS - I

SHEET NUMBER:	REV. #
GAS_3.2.4_600	0

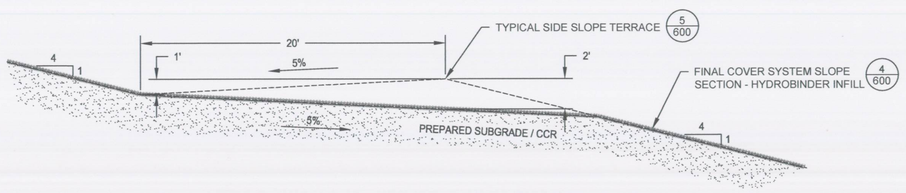


NOTES:
1. ELEVATIONS PROVIDED ARE FOR EXAMPLE ONLY. SEE GRADING PLAN FOR ACTUAL ELEVATIONS.
2. SHADING REPRESENTS HYDROBINDER INFILL

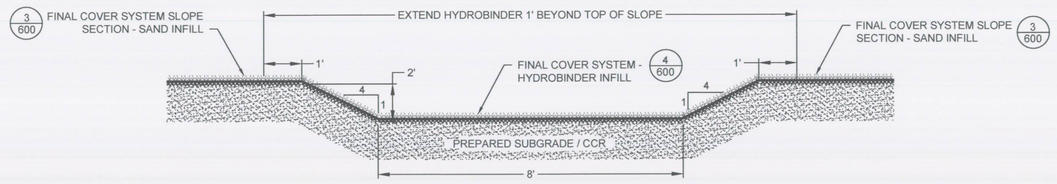
2/601 DOWN SLOPE CHANNEL - PLAN
NTS



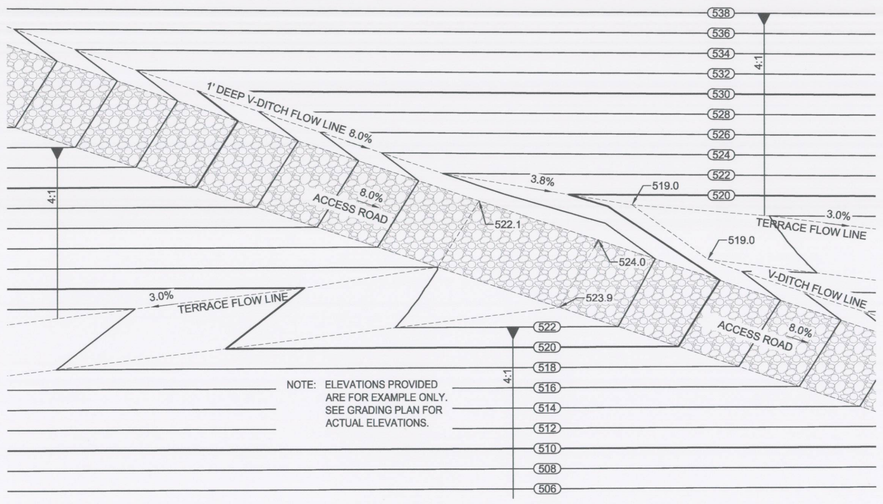
1/601 TYPICAL SIDE SLOPE SECTION
NTS



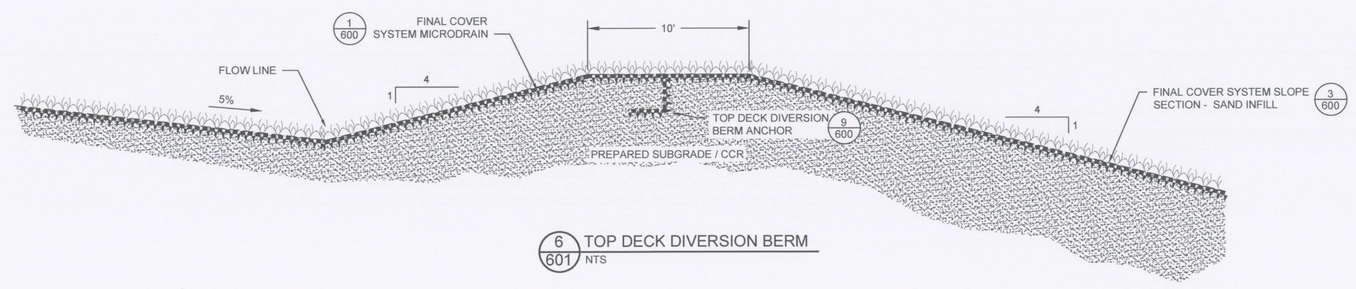
A/601 DOWN SLOPE CHANNEL - SECTION A
NTS



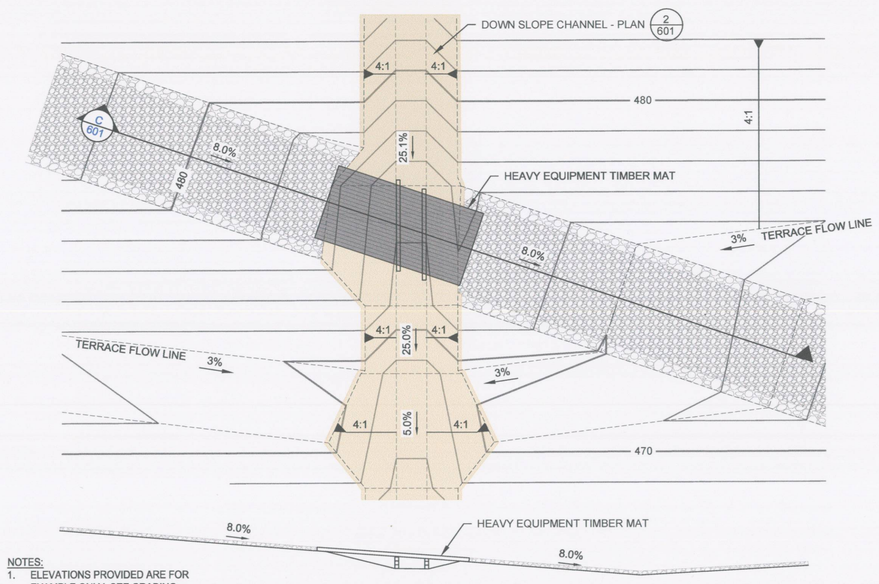
B/601 DOWN SLOPE CHANNEL - SECTION B
NTS



3/601 TERRACE AT ROAD CROSSING
NTS



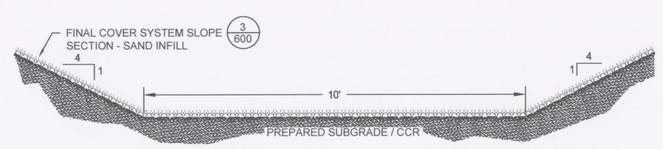
6/601 TOP DECK DIVERSION BERM
NTS



NOTES:
1. ELEVATIONS PROVIDED ARE FOR EXAMPLE ONLY. SEE GRADING PLAN FOR ACTUAL ELEVATIONS.
2. SHADING REPRESENTS HYDROBINDER INFILL

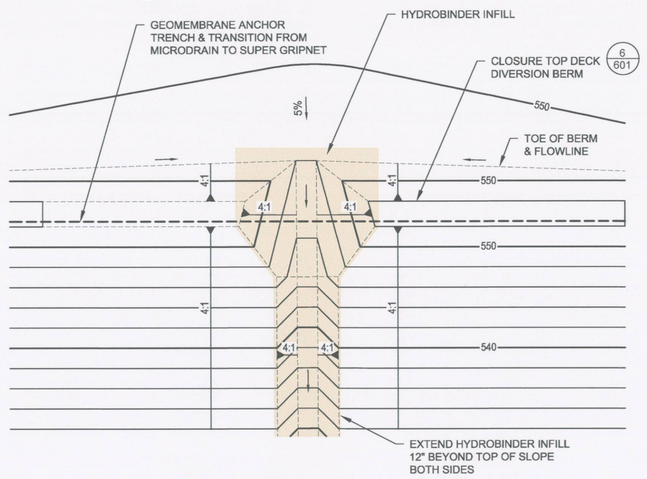
SECTION - C

4/601 HEAVY EQUIPMENT MAT AT DOWN SLOPE CHANNEL CROSSING
NTS

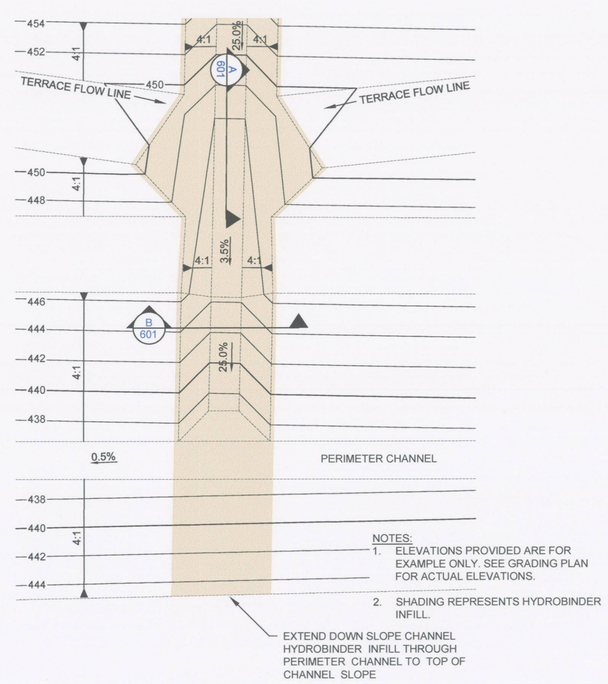


7/601 PERIMETER DRAINAGE CHANNEL - SAND INFILL
NTS

PERIMETER CHANNEL REACH CHART								
UPSTREAM DOWNSLOPE CHANNEL	DOWNSTREAM DOWNSLOPE CHANNEL	BOTTOM WIDTH (ft)	SIDE SLOPE	25-YEAR VELOCITY (ft/s)	CHANNEL LINING TYPE	DESIGN MODEL CHANNEL LINING TYPE	25-YEAR FLOW RATE (cfs)	100-YEAR FLOW RATE (cfs)
1	2	10	4:1 / 4:1	3.20	ClosureTurf	Sand Infill	56.12	74.31
2	3	10	4:1 / 4:1	3.98	ClosureTurf	Sand Infill	117.40	155.63
3	4	10	4:1 / 4:1	4.57	ClosureTurf	Sand Infill	193.90	257.94
4	5	10	4:1 / 4:1	4.79	ClosureTurf	Sand Infill	232.25	310.27
5	South Pond	10	4:1 / 4:1	4.84	ClosureTurf	Sand Infill	242.04	323.64
8	West Pond	10	4:1 / 4:1	3.72	ClosureTurf	Sand Infill	92.58	122.97
9	10	10	4:1 / 4:1	2.82	ClosureTurf	Sand Infill	36.53	48.38
10	11	10	4:1 / 4:1	3.33	ClosureTurf	Sand Infill	63.14	84.09
11	West Pond	10	4:1 / 4:1	3.90	ClosureTurf	Sand Infill	110.46	147.36
12	West Pond	10	4:1 / 4:1	3.39	ClosureTurf	Sand Infill	68.29	90.92



5/601 DOWN SLOPE CHANNEL AT TOP DECK
NTS



8/601 DOWN SLOPE CHANNEL AT PERIMETER CHANNEL
NTS

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 25987 GILBERT M. HAINES
05/29/19

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PROJECT:
Alabama Power
PLANT E.C. GASTON
31972 HIGHWAY 25
WILSONVILLE, ALABAMA

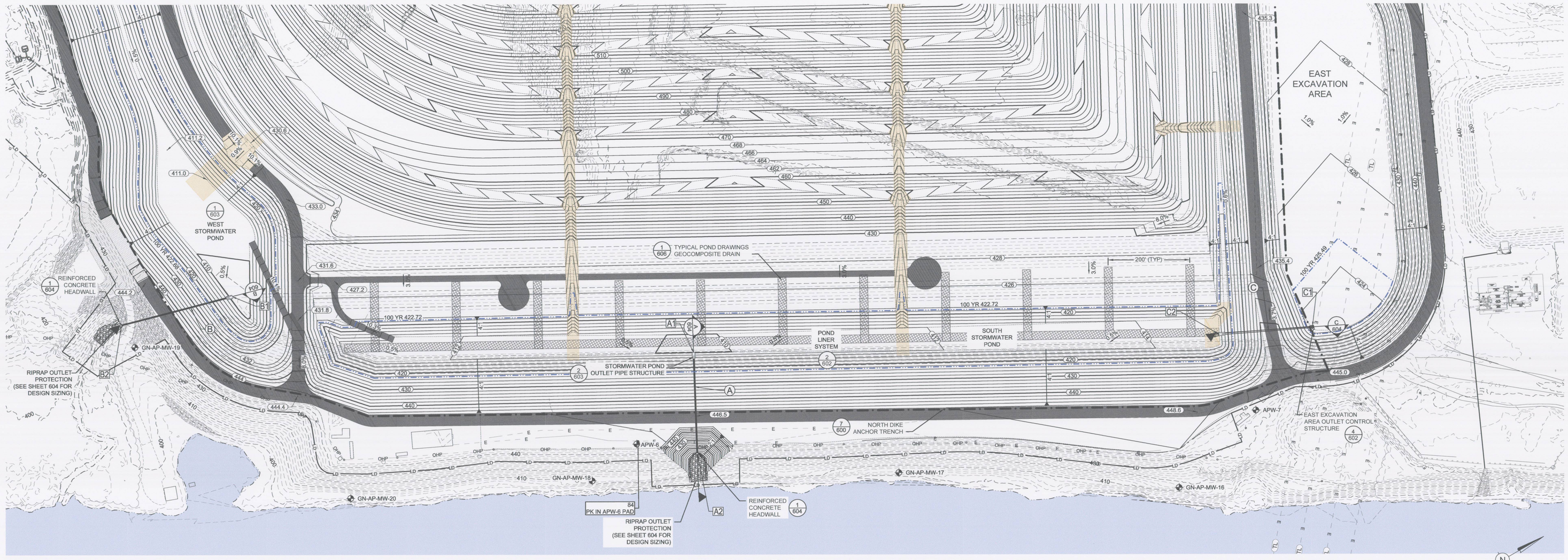
PROJECT No: 6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:
CONSTRUCTION DETAILS - II

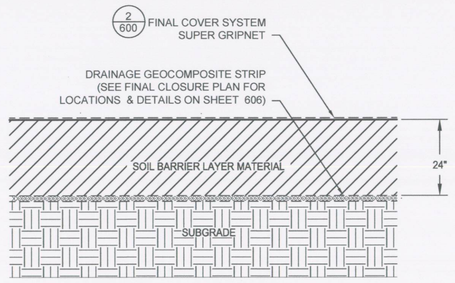
SHEET NUMBER:	REV. #
GAS_3.2.4_601	0



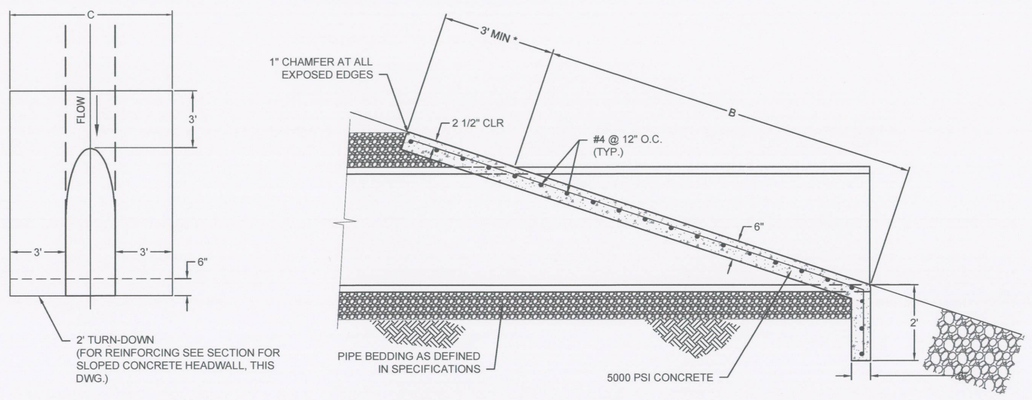
1/602 SOUTH STORMWATER POND - PLAN VIEW
NTS

STORM DRAINAGE PIPES (25 YEAR STORM EVENT)																
PIPE NAME	SIZE	LENGTH	Slope	MATERIAL	INVERT UP	INVERT DOWN	HGL UP	HGL DOWN	FLOW (cfs)	EGL UP	EGL DOWN	VELOCITY (f/s)	LOCATION UP	LOCATION DOWN	STRUCTURE ID UP	STRUCTURE ID DOWN
A	30	247	0.51%	HDPE	409.60	408.35	415.16	410.53	56.310	418.62	413.99	14.94	N 1177913.15 / E 2284845.75	N 1177796.99 / E 2285064.24	A1	A2
B	30	280	0.41%	HDPE	409.50	408.35	414.89	410.53	56.910	418.43	414.07	15.10	N 1177003.51 / E 2284159.88	N 1176734.03 / E 2284085.49	B1	B2
C	36	230	1.00%	HDPE	418.40	416.10	420.44	418.33	46.000	421.63	419.52	8.78	N 1179258.00 / E 2285551.66	N 1179050.57 / E 2285452.11	C1	C2
D	24	157	0.27%	HDPE	420.88	420.47	423.73	422.11	19.570	424.79	423.17	8.28	N 1176476.57 / E 2282043.86	N 1176620.76 / E 2282105.73	D1	D2
E	24	98	17.07%	N-12 WT HDPE	442.50	425.70	442.97	426.21	1.670	442.98	426.23	1.04	N 1176087.20 / E 2281993.95	N 1176157.73 / E 2281925.36	E1	E2
F	30	71	8.11%	N-12 WT HDPE	437.27	431.51	438.84	433.42	18.660	439.30	433.88	5.48	N 1175611.47 / E 2281472.21	N 1175645.77 / E 2281410.06	F1	F2
G	24	48	0.16%	N-12 WT HDPE	436.74	436.66	438.68	438.26	15.150	439.35	438.93	6.59	N 1175134.47 / E 2281211.43	N 1175174.47 / E 2281184.65	G1	G2
H	24	51	0.50%	N-12 WT HDPE	437.67	437.42	438.85	438.88	8.620	439.11	439.14	4.12	N 1175135.12 / E 2280997.43	N 1175176.83 / E 2281026.59	H1	H2

STORM DRAIN PIPES D THROUGH H NOT SHOWN ON THIS SHEET.



2/602 POND LINER SYSTEM
NTS

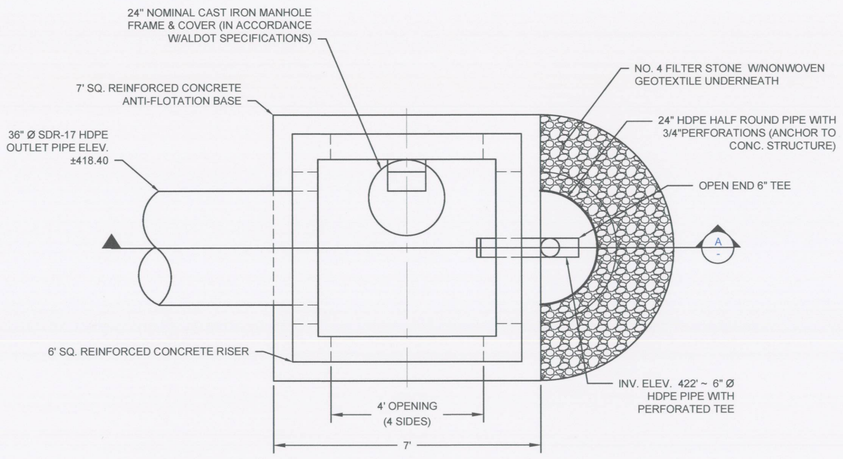


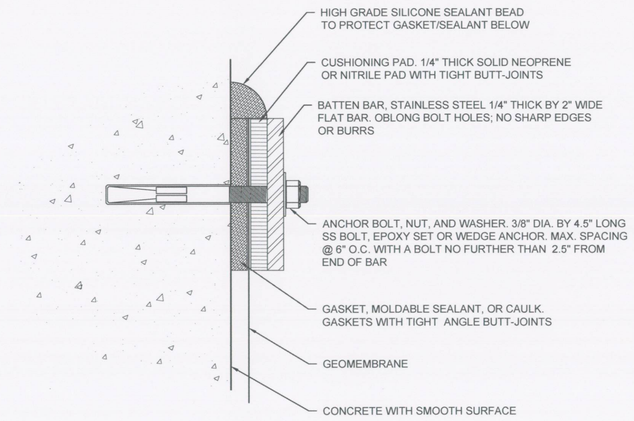
HEADWALL DIMENSIONS					
INSIDE DIA OF PIPE	AREA SQ FT	SLOPE	B	C	CU YDS ONE BARREL
24"	3.1	4 : 1	5'-6"	6'-0"	1.32
30"	4.9	4 : 1	7'-7"	6'-6"	1.60
36"	7.1	4 : 1	9'-8"	7'-0"	1.86

NOTE:

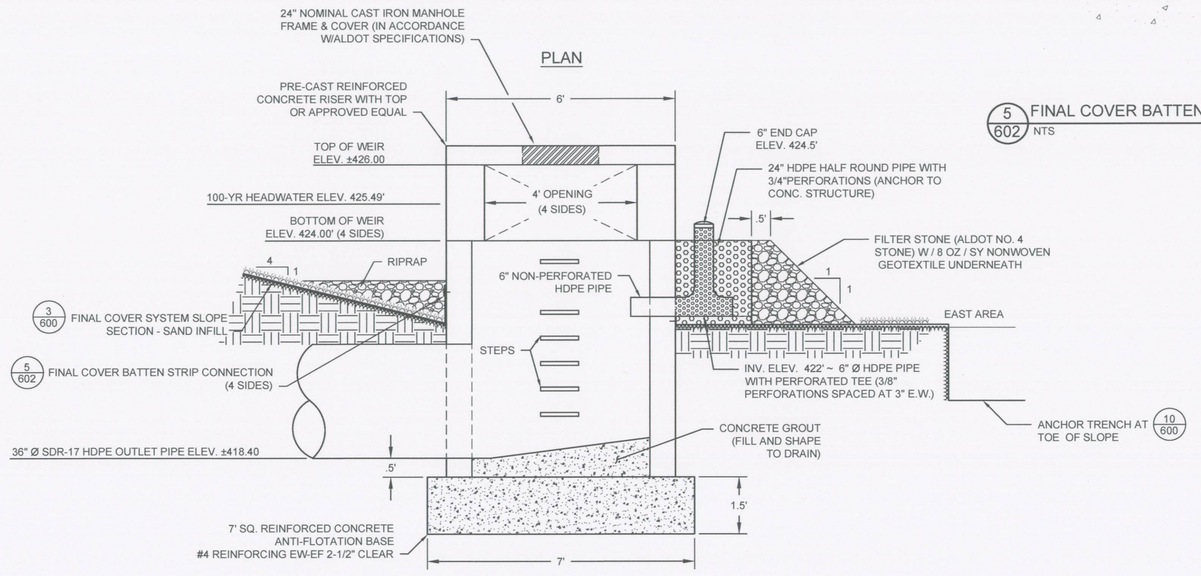
1. * FOR STORM DRAINS E, F, G & H EXTEND CONCRETE TO TOP OF SLOPE IF LESS THAN 2' IS AVAILABLE IN DRAINAGE CHANNEL.
2. SEE SHEET 605 FOR PROFILE AND INVERT INFORMATION.

3/602 SLOPED CONCRETE HEADWALL
NTS





5/602 FINAL COVER BATTEN STRIP CONNECTION
NTS



4/602 EAST EXCAVATION AREA OUTLET CONTROL STRUCTURE
NTS

100 0 100 200 FT

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 25987 GILBERT M. HAINES
05/29/19

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Alabama Power

PLANT E.C. GASTON

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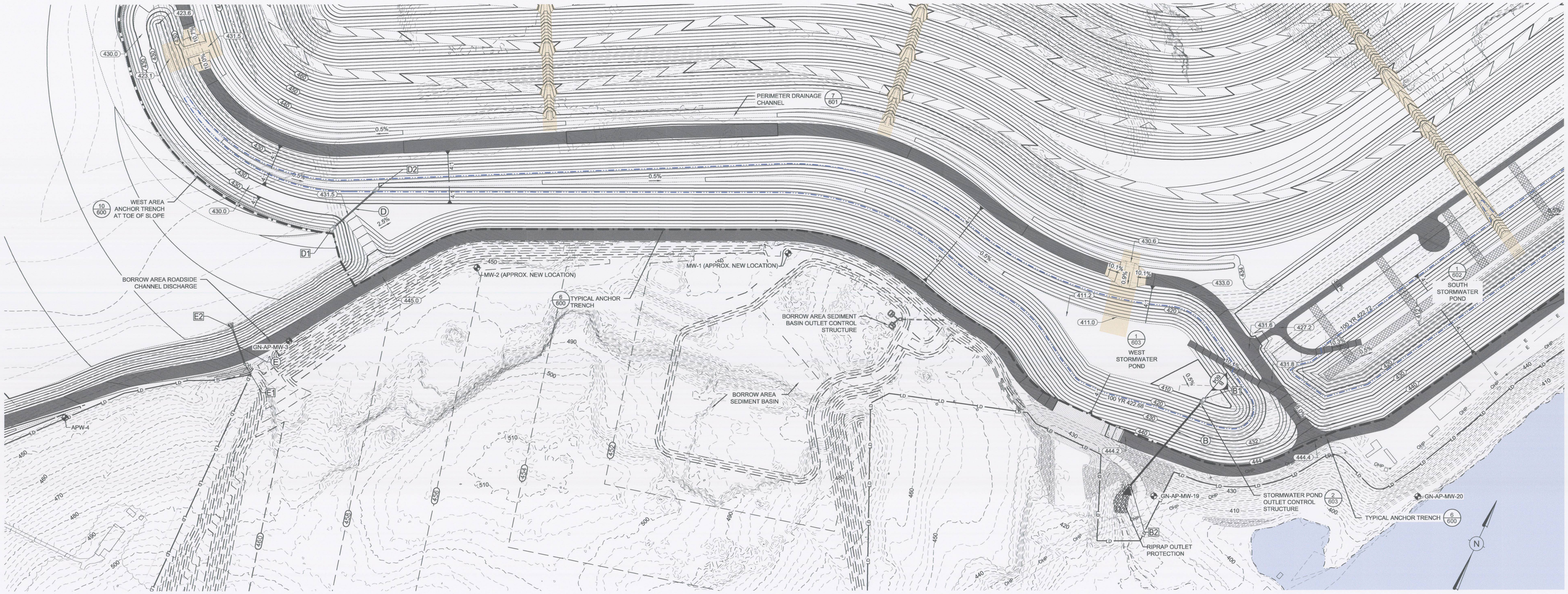
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

CONSTRUCTION DETAILS - III

SHEET NUMBER:	REV. #
GAS_3.2.4_602	0

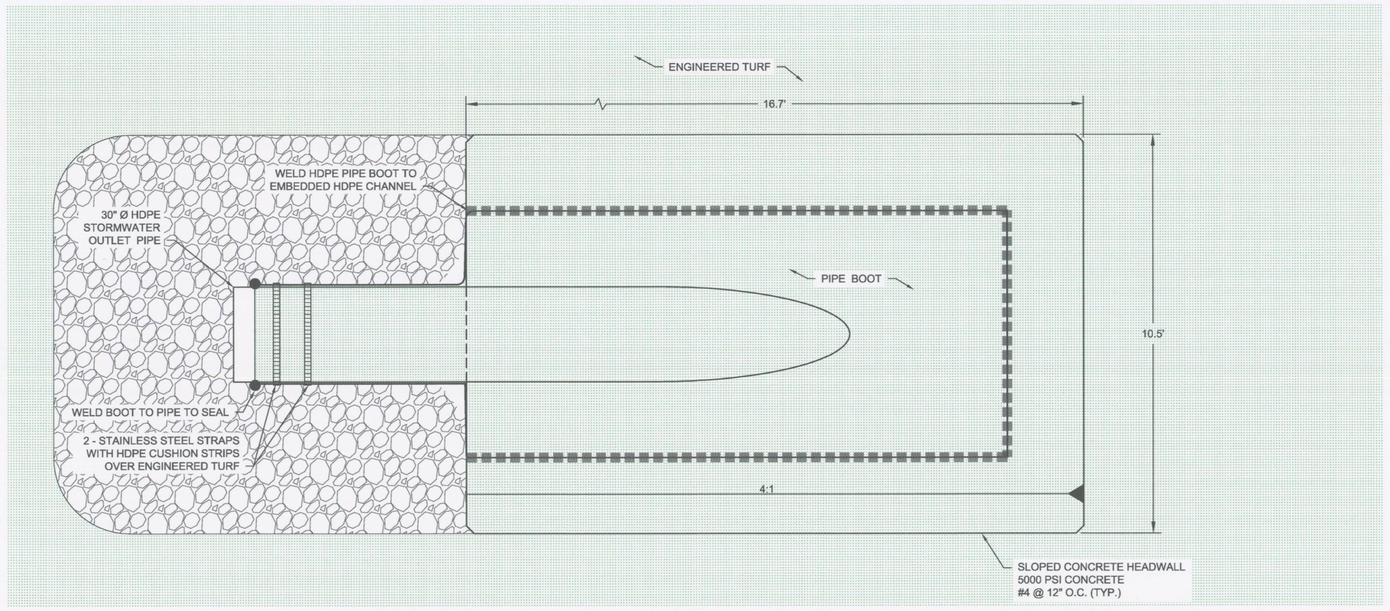


1 603 WEST STORMWATER POND

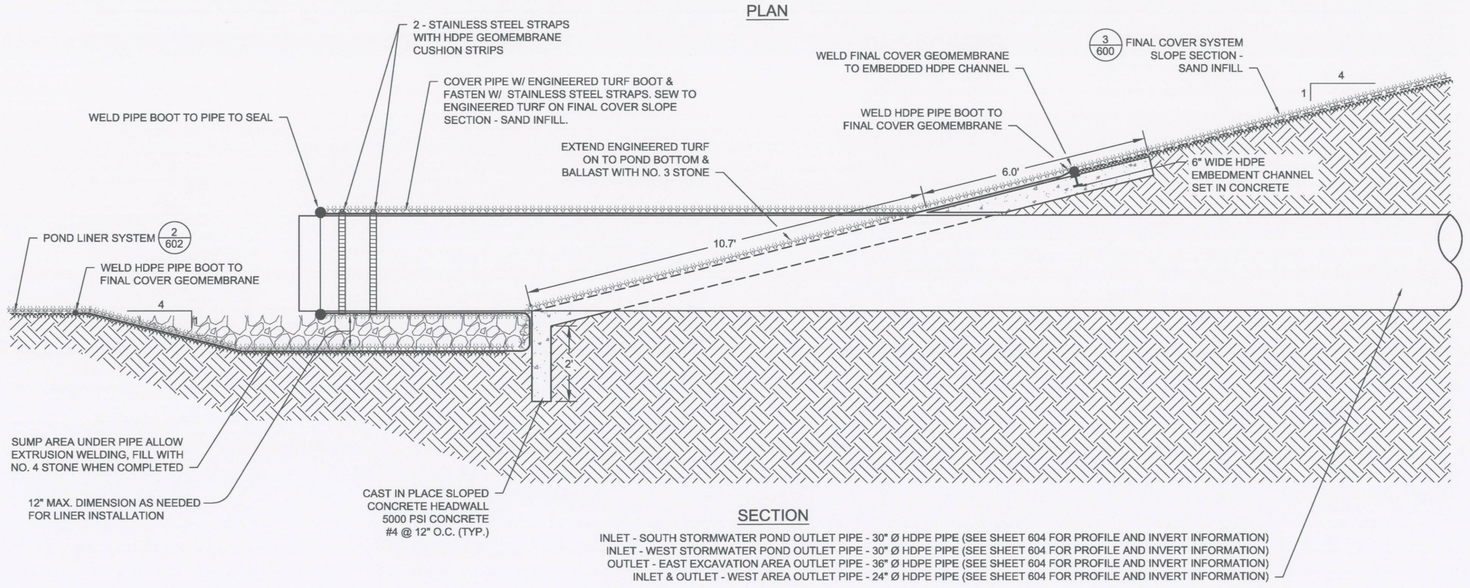
100 0 100 200 FT

STORM DRAINAGE PIPES (25 YEAR STORM EVENT)															
PIPE NAME	SIZE	LENGTH	Slope	MATERIAL	INVERT UP	INVERT DOWN	HGL UP	HGL DOWN	FLOW (cfs)	EGL UP	EGL DOWN	VELOCITY (fts)	LOCATION UP	LOCATION DOWN	STRUCTURE ID UP	STRUCTURE ID DOWN
A	30	247	0.51%	HDPE	409.60	408.35	415.16	410.53	56.310	418.62	413.99	14.94	N 1177913.15 / E 2284845.75	N 1177796.99 / E 2285064.24	A1	A2
B	30	280	0.41%	HDPE	409.50	408.35	414.89	410.53	56.910	418.43	414.07	15.10	N 1177003.51 / E 2284159.88	N 1176734.03 / E 2284085.49	B1	B2
C	36	230	1.00%	HDPE	418.40	416.10	420.44	418.33	46.000	421.63	419.52	8.78	N 1179258.00 / E 2285551.66	N 1179050.57 / E 2285452.11	C1	C2
D	24	157	0.27%	HDPE	420.88	420.47	423.73	422.11	19.570	424.79	423.17	8.28	N 1176476.57 / E 2282043.86	N 1176620.76 / E 2282105.73	D1	D2
E	24	98	17.07%	N-12 WT HDPE	442.50	425.70	442.97	426.21	1.670	442.98	426.23	1.04	N 1176087.20 / E 2281993.95	N 1176157.73 / E 2281925.36	E1	E2
F	30	71	8.11%	N-12 WT HDPE	437.27	431.51	438.84	433.42	18.660	439.30	433.88	5.48	N 1175611.47 / E 2281472.21	N 1175645.77 / E 2281410.08	F1	F2
G	24	48	0.16%	N-12 WT HDPE	436.74	436.66	438.68	438.26	15.150	439.35	438.93	6.59	N 1175134.47 / E 2281211.43	N 1175174.47 / E 2281184.65	G1	G2
H	24	51	0.50%	N-12 WT HDPE	437.67	437.42	438.85	438.88	8.620	439.11	439.14	4.12	N 1175135.12 / E 2280997.43	N 1175176.83 / E 2281029.59	H1	H2

STORM DRAIN PIPES A, C, F, H AND G NOT SHOWN ON THIS SHEET.



PLAN



SECTION

INLET - SOUTH STORMWATER POND OUTLET PIPE - 30" Ø HDPE PIPE (SEE SHEET 604 FOR PROFILE AND INVERT INFORMATION)
INLET - WEST STORMWATER POND OUTLET PIPE - 30" Ø HDPE PIPE (SEE SHEET 604 FOR PROFILE AND INVERT INFORMATION)
OUTLET - EAST EXCAVATION AREA OUTLET PIPE - 36" Ø HDPE PIPE (SEE SHEET 604 FOR PROFILE AND INVERT INFORMATION)
INLET & OUTLET - WEST AREA OUTLET PIPE - 24" Ø HDPE PIPE (SEE SHEET 604 FOR PROFILE AND INVERT INFORMATION)

2 603 SLOPED CONCRETE HEADWALL WITH PIPE BOOT
NTS

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED No. 25987 PROFESSIONAL ENGINEER GILBERT M. HAINES
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

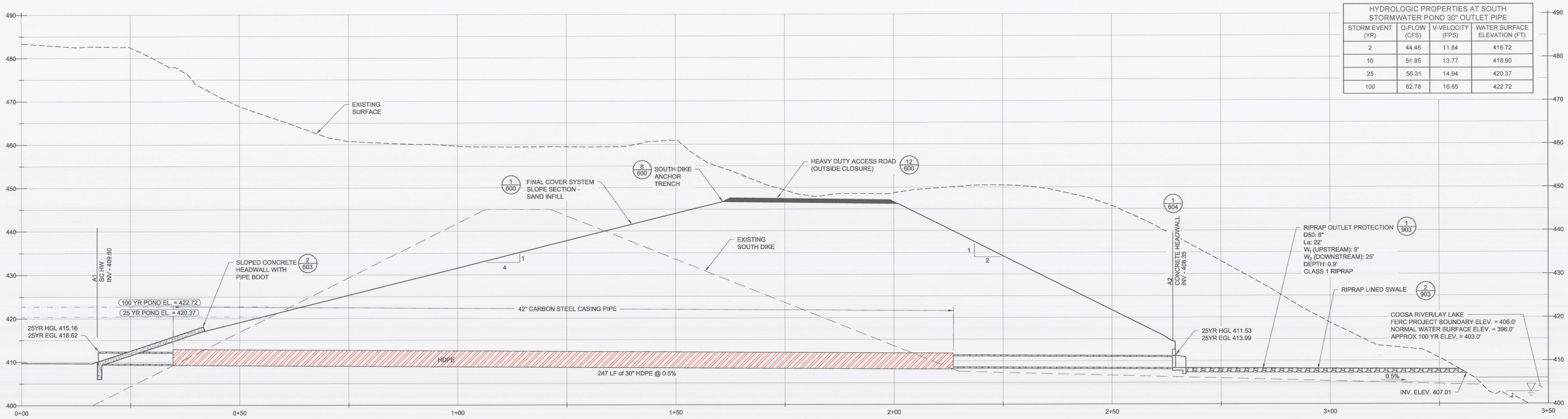
REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

CONSTRUCTION DETAILS - IV

SHEET NUMBER:	REV. #
GAS_3.2.4_603	0

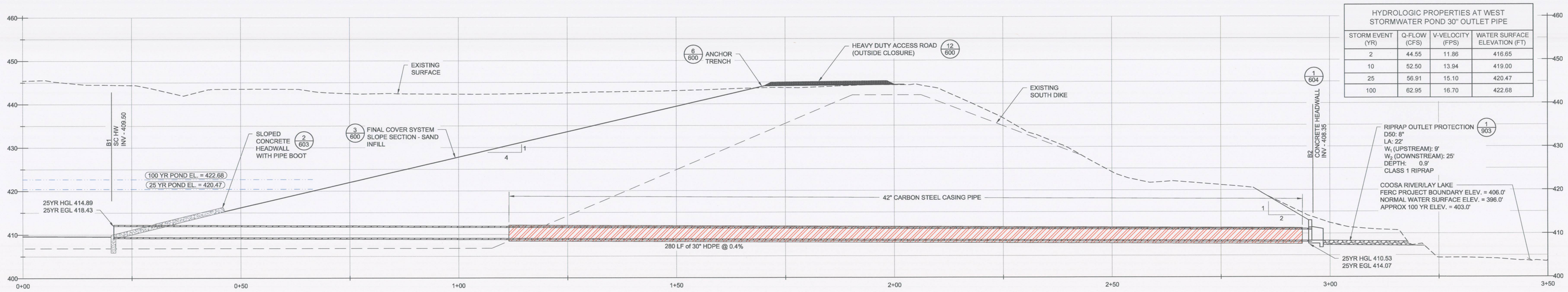


HYDROLOGIC PROPERTIES AT SOUTH STORMWATER POND 30" OUTLET PIPE			
STORM EVENT (YR)	Q-FLOW (CFS)	V-VELOCITY (FPS)	WATER SURFACE ELEVATION (FT)
2	44.46	11.84	416.72
10	51.85	13.77	418.90
25	56.31	14.94	420.37
100	62.78	16.65	422.72

A/604 PROFILE - SOUTH STORMWATER POND OUTLET PIPE
NTS

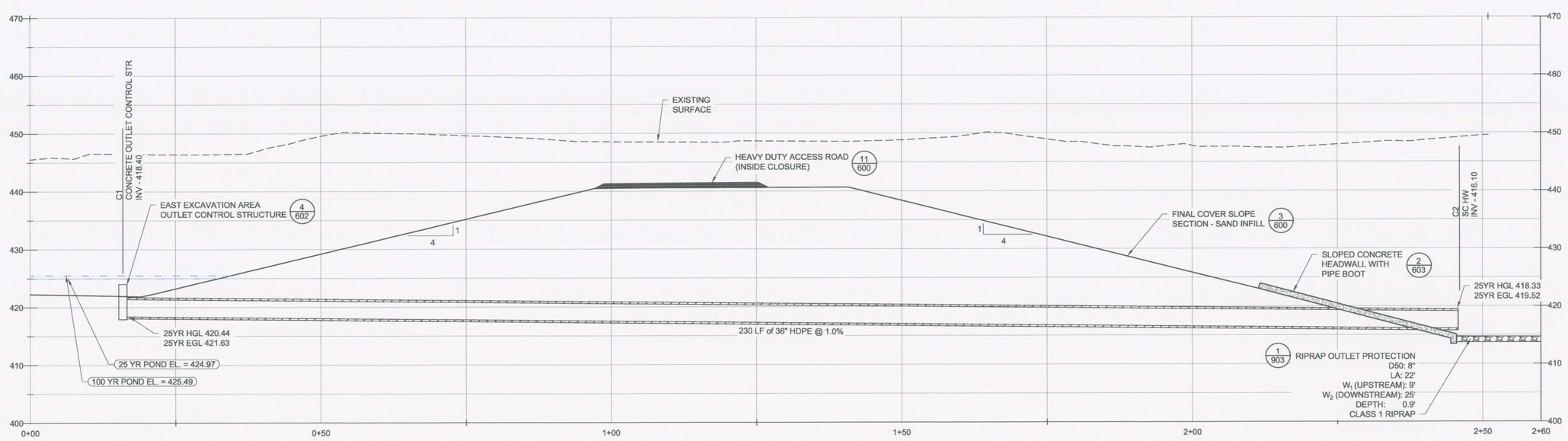
NOTES:

1. CONTRACTOR TO COORDINATE IN ADVANCE OF ANY WORK ON RIPRAP LINED SWALE WITH SCS FOR SCS'S PERMITTING EFFORTS REQUIRED FOR WORK WITHIN THE FERC PROJECT BOUNDARY (APPROX. ELEVATION 406') AND WITHIN THE COOSA RIVER.



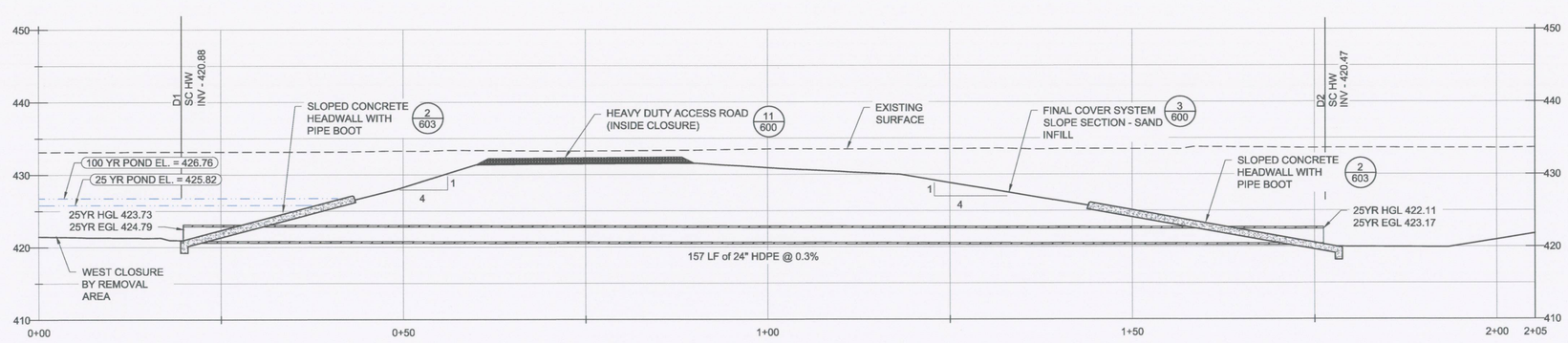
HYDROLOGIC PROPERTIES AT WEST STORMWATER POND 30" OUTLET PIPE			
STORM EVENT (YR)	Q-FLOW (CFS)	V-VELOCITY (FPS)	WATER SURFACE ELEVATION (FT)
2	44.55	11.86	416.65
10	52.50	13.94	419.00
25	56.91	15.10	420.47
100	62.95	16.70	422.68

B/604 PROFILE - WEST STORMWATER POND OUTLET PIPE
NTS



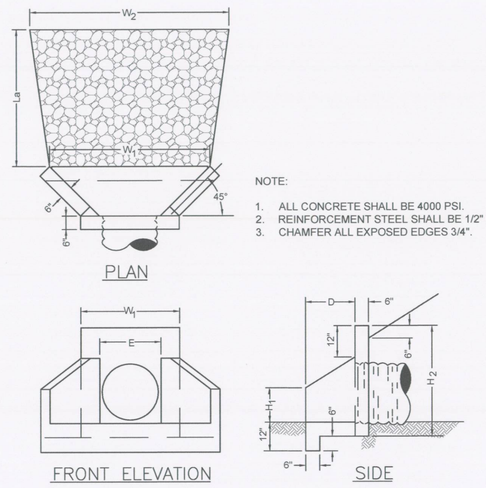
C/604 PROFILE - EAST AREA STORM DRAIN PIPE
NTS

HYDROLOGIC PROPERTIES AT EAST EXCAVATION 36" STORMWATER OUTLET PIPE			
STORM EVENT (YR)	Q-FLOW (CFS)	V-VELOCITY (FPS)	WATER SURFACE ELEVATION (FT)
2	22.06	4.76	424.49
10	35.71	7.06	424.73
25	45.20	8.64	424.96
100	60.75	11.33	425.49



HYDROLOGIC PROPERTIES AT WEST CLEAN CLOSURE 24" STORMWATER OUTLET PIPE			
STORM EVENT (YR)	Q-FLOW (CFS)	V-VELOCITY (FPS)	WATER SURFACE ELEVATION (FT)
2	11.79	5.33	424.00
10	16.20	7.74	424.92
25	19.57	8.28	425.82
100	22.58	9.47	426.76

D/604 PROFILE - WEST AREA STORM DRAIN PIPE
NTS



NOTE:

1. ALL CONCRETE SHALL BE 4000 PSI.
2. REINFORCEMENT STEEL SHALL BE 1/2" OF INTERMEDIATE GRADE.
3. CHAMFER ALL EXPOSED EDGES 3/4".

HEADWALL DIMENSIONS FOR METAL PIPE							
INSIDE DIA. OF PIPE	W_1	W_2	H_1	H_2	D	E	TONS
24"	4'-2"	8'-2"	2'-0"	4'-2"	1'-8"	2'-9"	1.73
30", 36"	4'-8"	8'-8"	2'-4"	4'-8"	2'-4"	3'-3"	1.92

1/604 REINFORCED CONCRETE HEADWALL
NTS

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 25987 GILBERT M. HAINES
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

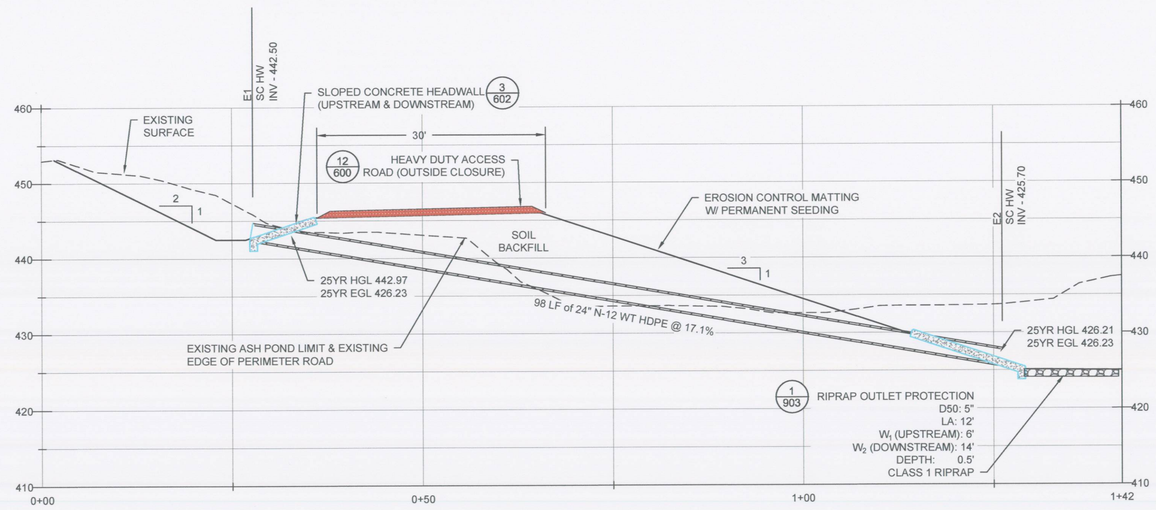
REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

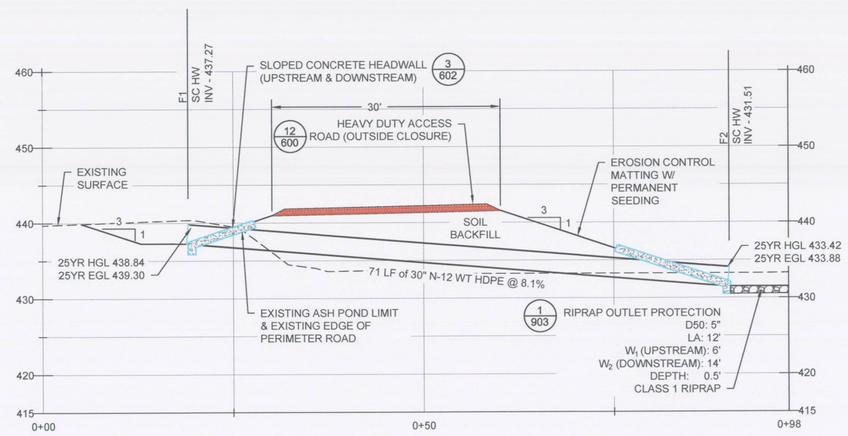
SHEET TITLE:

CONSTRUCTION DETAILS - V

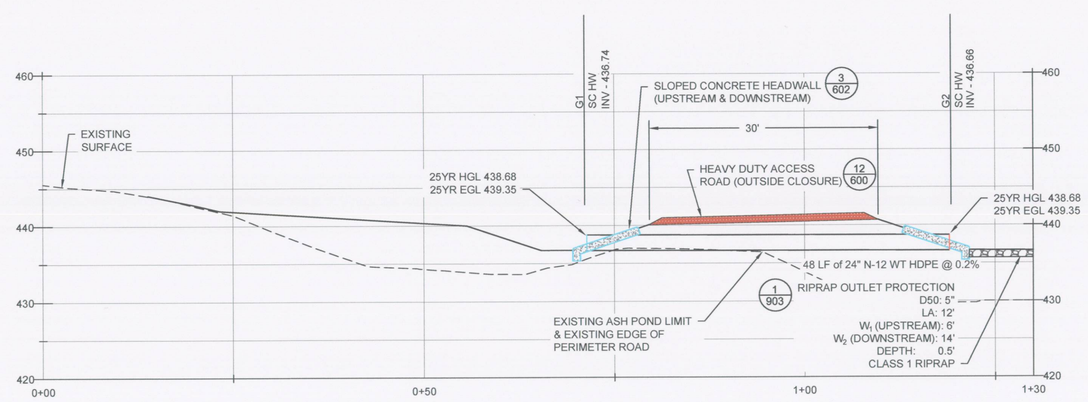
SHEET NUMBER:	REV. #
GAS_3.2.4_604	0



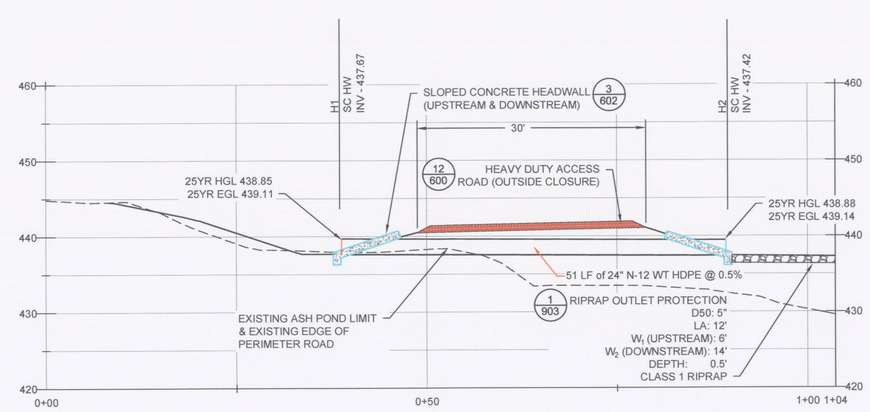
E/605 STORM DRAIN PIPE - E
NTS



F/605 STORM DRAIN PIPE - F
NTS



G/605 STORM DRAIN PIPE - G
NTS



H/605 STORM DRAIN PIPE - H
NTS

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED No. 25987 PROFESSIONAL ENGINEER GILBERT M. HAINES
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

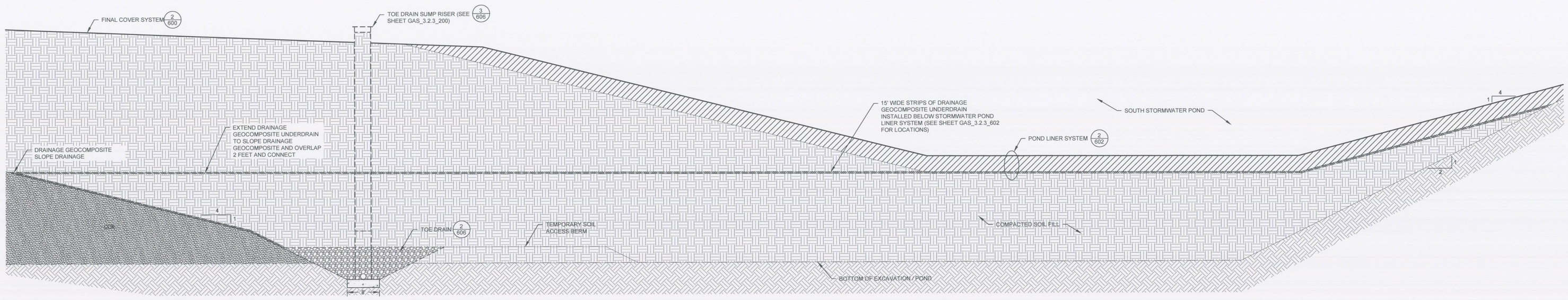
REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

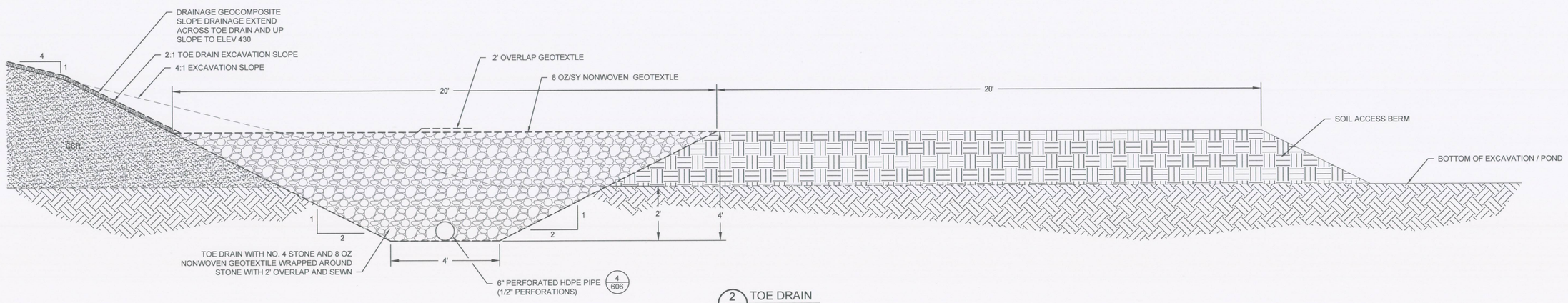
SHEET TITLE:

CONSTRUCTION DETAILS - VI

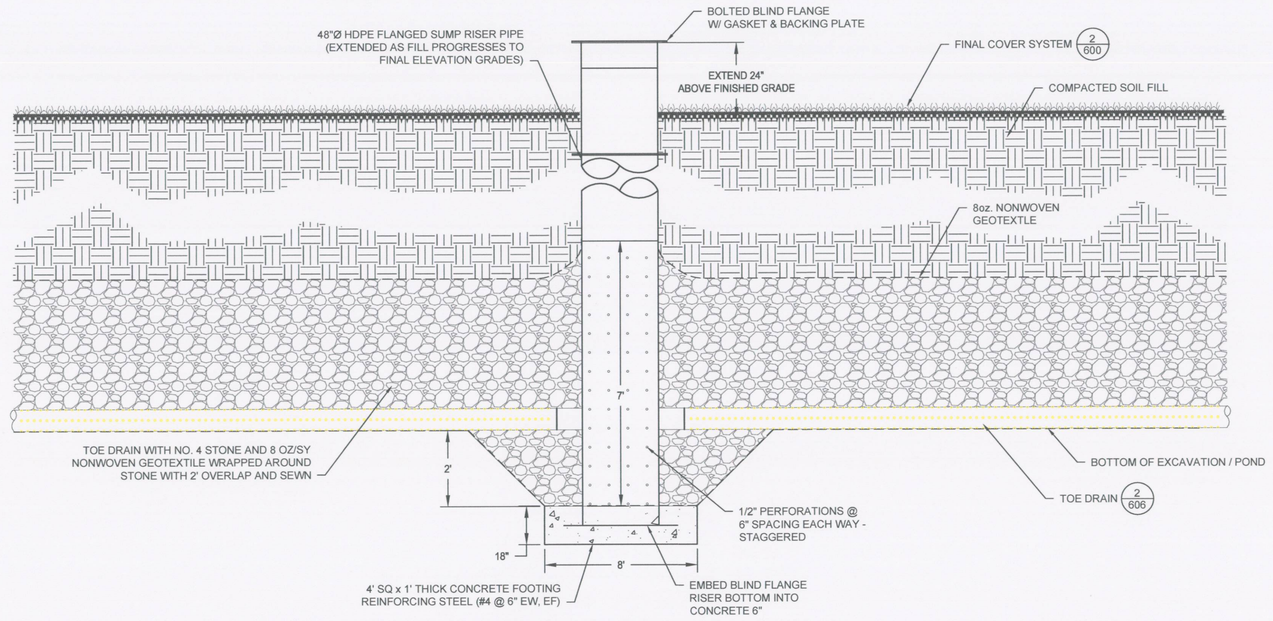
SHEET NUMBER:	REV. #
GAS_3.2.4_605	0



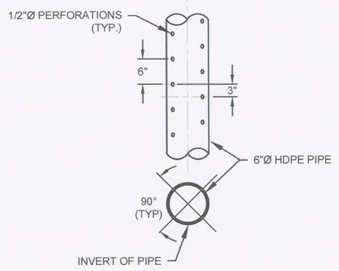
1/606 TYPICAL POND GEOCOMPOSITE DRAIN
NTS



2/606 TOE DRAIN
NTS



3/606 TOE DRAIN SUMP RISER
NTS



4/606 6" Ø PERFORATED HDPE PIPE
NTS

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED No. 25787 PROFESSIONAL ENGINEER GILBERT M. HAINES
05/24/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

CONSTRUCTION DETAILS - VII

SHEET NUMBER:	REV. #
GAS_3.2.4_606	0

POINT TABLE (LIMITS OF DISTURBANCE)		
POINT #	NORTHING	EASTING
400	1178966.4	2285710.0
401	1178705.9	2285631.4
402	1178483.0	2285466.9
403	1178321.4	2285365.6
404	1177879.7	2285128.6
405	1177850.1	2285181.0
406	1177659.7	2285080.5
407	1177364.7	2284838.2
408	1177690.5	2285022.6
409	1176997.4	2284660.0
410	1176996.7	2284485.4
411	1176808.5	2284168.2
412	1176620.1	2284164.4
413	1176575.5	2284068.8
414	1176789.6	2283781.4
415	1176689.4	2283453.8
416	1176159.1	2283640.0
417	1175599.1	2283276.2
418	1175368.7	2283030.6
419	1175193.4	2282022.4
420	1176072.2	2282016.0
421	1175899.6	2281753.8
422	1175605.6	2281491.1
423	1175337.5	2281402.3
424	1175232.6	2281325.1
425	1175051.7	2281240.5
426	1175057.0	2280952.4
427	1175502.8	2280745.0
428	1176546.3	2280741.6
429	1177814.7	2280735.5
430	1178270.8	2280819.1
431	1178271.2	2280889.9
432	1179866.2	2284435.3
433	1179921.7	2284928.9
434	1179627.3	2285563.3
435	1179207.1	2285690.9
436	1178979.6	2285635.7
437	1176773.8	2283811.4
438	1176772.5	2283988.0

LEGEND

PROPOSED

- 450 — PROPOSED CONTOURS
- FINAL COVER LIMITS
- XX — SILT FENCE
- DC — EROSION AND SEDIMENT CONTROL BMP (SEE ESPC LEGEND)
- XXXXXXXXXXXXXXXXXX — FILTER SOCK
- SURFACE RUNOFF FLOW DIRECTION
- LD — LIMITS OF DISTURBANCE
- FM — FORCEMAIN
- HEAVY VEGETATION AND CLEARING TO BE REMOVED

CBMPP LEGEND

SITE PREPARATION
- CEP — CONSTRUCTION EXIT PAD
- LG — LAND GRADING

SURFACE STABILIZATION
- DC — DUST CONTROL
- GK — GROUNDSKEEPING

SEDIMENT CONTROL
- SB — SEDIMENT BARRIER

RUNOFF CONVEYANCE
- CD-FS — COMPOSITE FILTER SOCK/WATTLES

STREAM PROTECTION
- BZ — BUFFER ZONE

N

ALABAMA NAD83 WEST US SURVEY FEET

200 0 200 400 FT

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED No. 25087 PROFESSIONAL ENGINEER GILBERT M. HAINES
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON
31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No: 6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

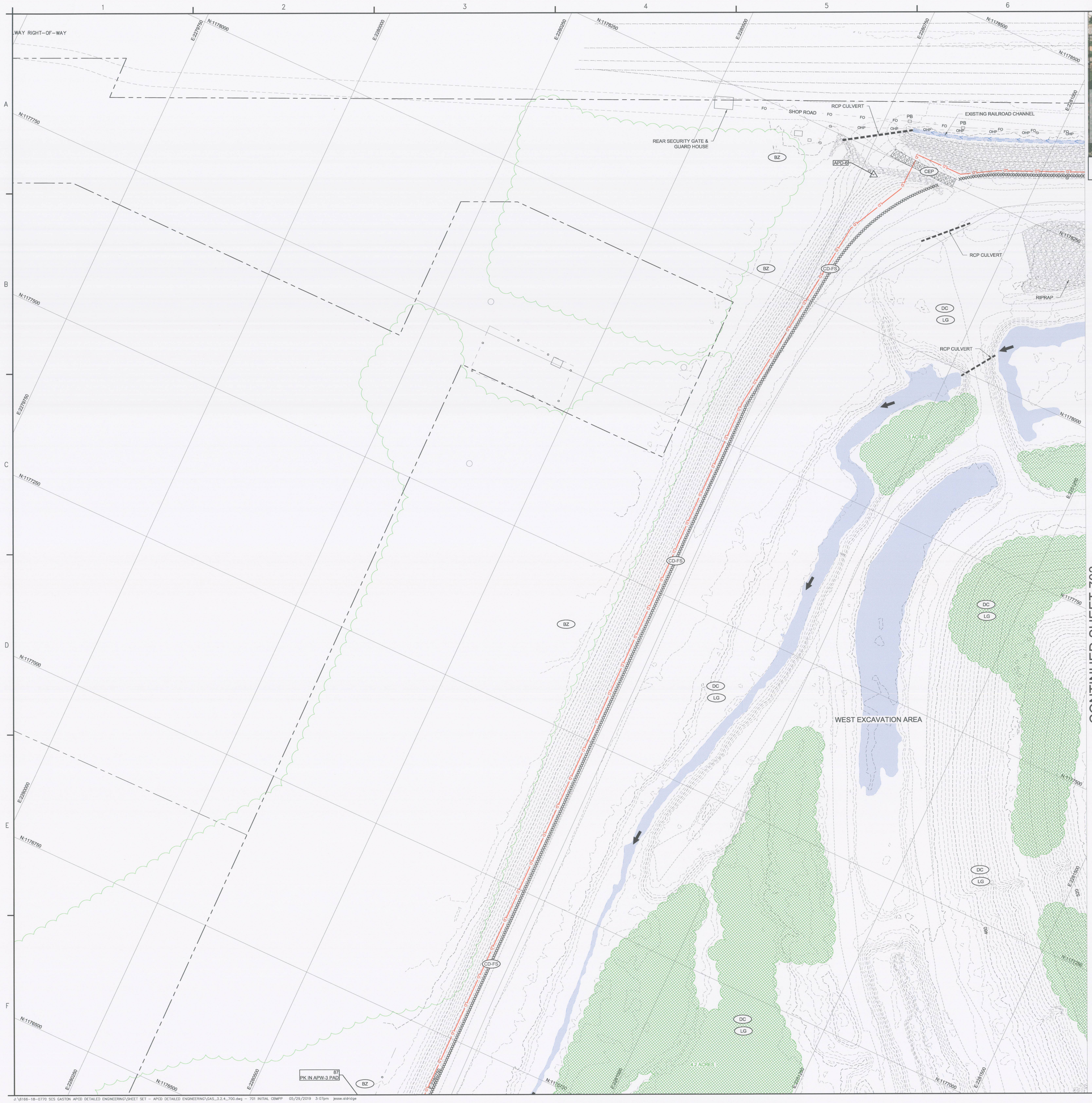
DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

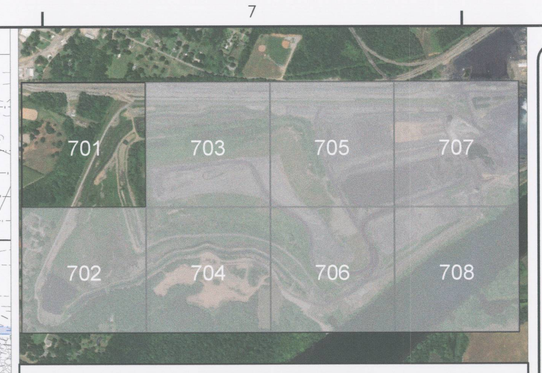
SHEET TITLE:

OVERALL INITIAL CBMPP

SHEET NUMBER:	REV. #
GAS_3.2.4_700	0

J:\6166-18-0770 SCS GASTON APCD DETAILED ENGINEERING\SHEET SET - APCD DETAILED ENGINEERING\GAS_3.2.4_700.dwg - 700 OVERALL INITIAL CBMPP 05/29/2019 3:07pm jesse.aldridge





KEY MAP

CONTINUED SHEET 703

CBMPP LEGEND

SITE PREPARATION
- LG — LAND GRADING
- CEP — CONSTRUCTION EXIT PAD

SURFACE STABILIZATION
- DC — DUST CONTROL

RUNOFF CONVEYANCE
- CD-FS — COMPOSITE FILTER SOCK/WATTLES

STREAM PROTECTION
- BZ — BUFFER ZONE

LEGEND

PROPOSED
- 450 — PROPOSED CONTOURS
- FINAL COVER LIMITS
- XX — SILT FENCE
- DC — EROSION AND SEDIMENT CONTROL BMP (SEE ESPC LEGEND)
- XXXXXXXXXXXXXXXXXX — FILTER SOCK
- SURFACE RUNOFF FLOW DIRECTION
- LD — LIMITS OF DISTURBANCE
- FM — FORCEMAIN
- HEAVY VEGETATION AND CLEARING TO BE REMOVED

N

ALABAMA NAD83 WEST US SURVEY FEET

50 0 50 100 FT

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 29987 GILBERT M. HAINES

05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

INITIAL CBMPP

SHEET NUMBER:	REV. #
GAS_3.2.4_701	0

KENNEDY AVENUE

MITCHELL STREET

EXISTING RESIDENCE (TYP.)

METAL GRATE CATWALK

WEST EXCAVATION AREA

BOAT RAMP

STACKED CONC. BLOCK WALL

CLEAR POOL

FLOATING PUMP

RCP CULVERT

WOOD PLANK SKIMMER

TEMPORARY 14" HDPE PIPE FROM CLEAR POOL TO EVOQUA TEMPORARY WATER TREATMENT FACILITY

EXISTING RESIDENCE

CONTINUED SHEET 704

KEY MAP

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED No. 29597 PROFESSIONAL ENGINEER GILBERT M. HAINES

05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

CBMPP LEGEND

SITE PREPARATION

- LG — LAND GRADING

SURFACE STABILIZATION

- DC — DUST CONTROL

RUNOFF CONVEYANCE

- CD-FS — COMPOSITE FILTER SOCK/WATTLES

LEGEND

PROPOSED

- 450 — PROPOSED CONTOURS
- FINAL COVER LIMITS
- XX — SILT FENCE
- DC — EROSION AND SEDIMENT CONTROL BMP (SEE ESPC LEGEND)
- XXXXXXXXXXXXXXXXXX — FILTER SOCK
- SURFACE RUNOFF FLOW DIRECTION
- LD — LIMITS OF DISTURBANCE
- FM — FORCEMAIN
- HEAVY VEGETATION AND CLEARING TO BE REMOVED

ALABAMA NAD83 WEST US SURVEY FEET

50 0 50 100 FT

REVISIONS

NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

INITIAL CBMPP

SHEET NUMBER:	REV. #
GAS_3.2.4_702	0

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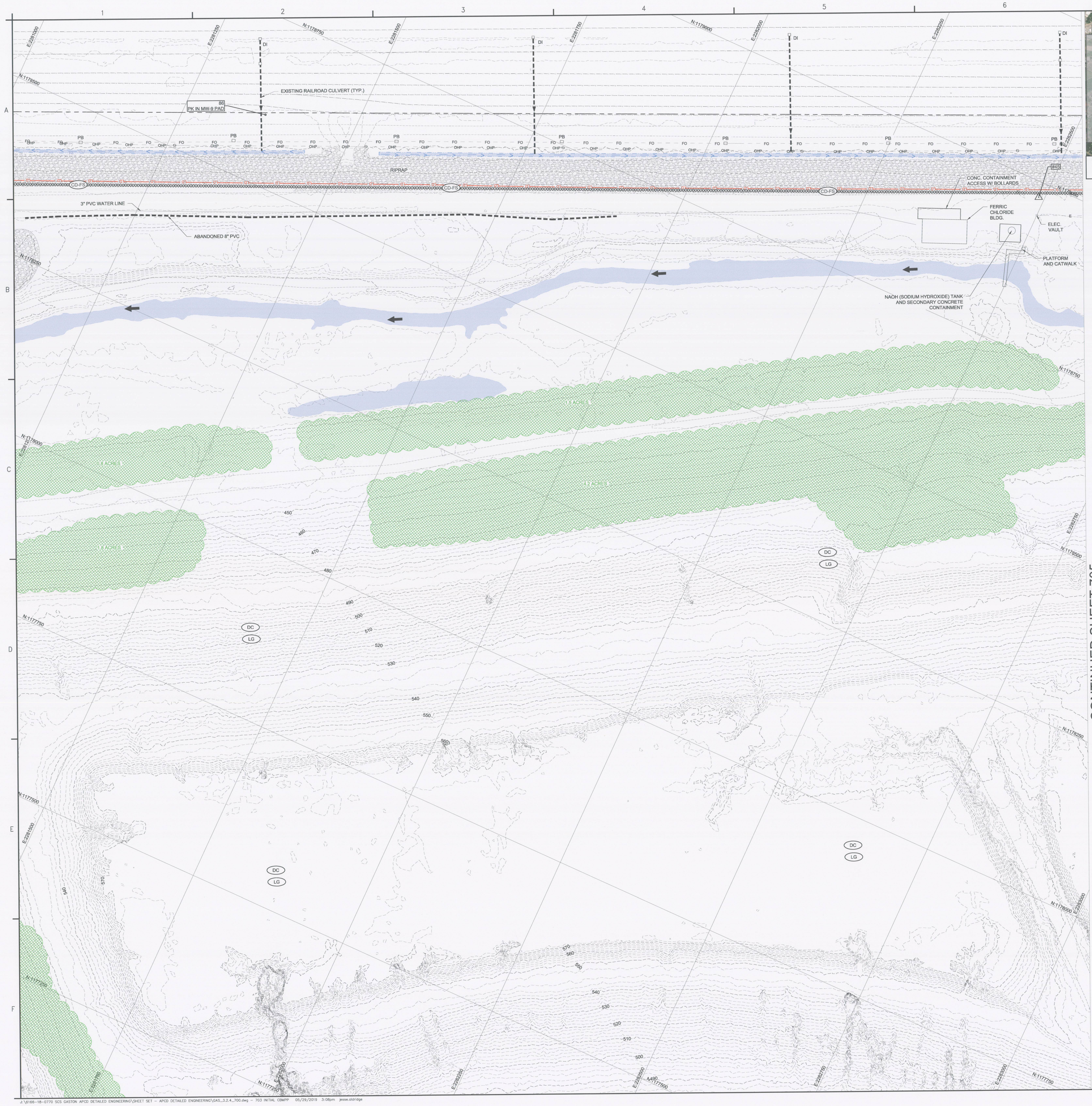


KEY MAP

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER GILBERT M. HAINES No. 25537
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

CBMPP LEGEND

SITE PREPARATION
(LG) LAND GRADING

SURFACE STABILIZATION
(DC) DUST CONTROL

RUNOFF CONVEYANCE
(CD-FS) COMPOSITE FILTER SOCK/WATTLES

LEGEND

PROPOSED
(450) PROPOSED CONTOURS
FINAL COVER LIMITS
XX SILT FENCE
(DC) EROSION AND SEDIMENT CONTROL BMP (SEE ESPC LEGEND)
XXXXXXXXXXXXXXXXXX FILTER SOCK
SURFACE RUNOFF FLOW DIRECTION
LD LIMITS OF DISTURBANCE
FM FORCEMAIN
HEAVY VEGETATION AND CLEARING TO BE REMOVED

N

ALABAMA NAD83 WEST US SURVEY FEET
50 0 50 100 FT

REVISIONS			
NO.	DATE	BY	APPROVED

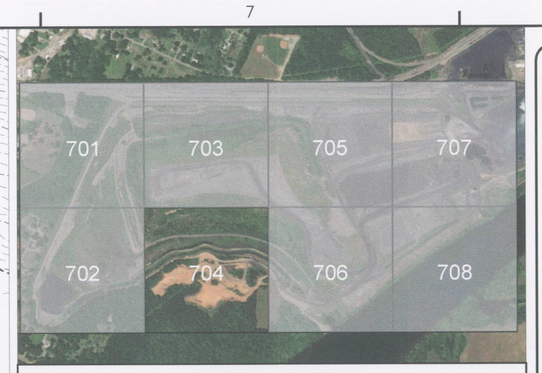
DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

INITIAL CBMPP

SHEET NUMBER:	REV. #
GAS_3.2.4_703	0

J:\6166-18-0770 SCS GASTON APCD DETAILED ENGINEERING\SHEET SET - APCD DETAILED ENGINEERING\GAS_3.2.4_700.dwg - 703 INITIAL CBMPP 05/29/2019 3:08pm jesse.aldridge



KEY MAP

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 25587 GILBERT M. HAINES
05/24/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

CBMPP LEGEND

SITE PREPARATION
(LG) LAND GRADING

SURFACE STABILIZATION
(DC) DUST CONTROL

LEGEND

PROPOSED
(450) PROPOSED CONTOURS
FINAL COVER LIMITS
XX SILT FENCE
(DC) EROSION AND SEDIMENT CONTROL BMP (SEE ESPC LEGEND)
XXXXXXXXXXXXXXXXXX FILTER SOCK
SURFACE RUNOFF FLOW DIRECTION
LD LIMITS OF DISTURBANCE
FM FORCEMAIN
HEAVY VEGETATION AND CLEARING TO BE REMOVED

REVISIONS

NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

INITIAL CBMPP

SHEET NUMBER:	REV. #
GAS_3.2.4_704	0

N

ALABAMA NAD83 WEST US SURVEY FEET
50 0 50 100 FT

J:\6166-18-0770 SCS GASTON APCD DETAILED ENGINEERING\SHEET SET - APCD DETAILED ENGINEERING\GAS_3.2.4_700.dwg - 704 INITIAL CBMPP 05/29/2019 3:08pm jesse.aldridge

EXISTING RAIL LINES

EXISTING RAILROAD CULVERT (TYP.)

EXISTING GRAVEL ROAD

ELEC. PANEL

ELEC. VAULT

ELEC. PANEL WITH MULTIPLE CONDUIT

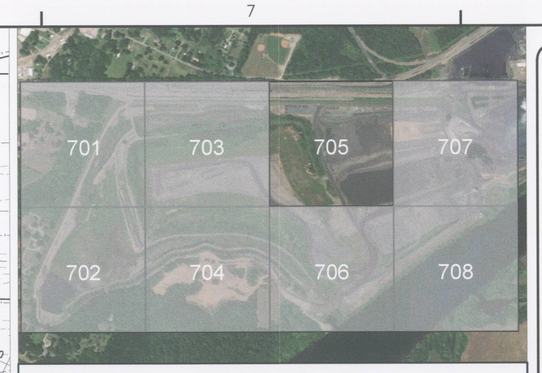
LAYDOWN AREA

PLATFORM AND CATWALK

RCP CULVERT

VEHICLE WASH, FUEL AREA, EMPLOYEE SANITATION AND HOUSEKEEPING

CONTINUED SHEET 707



KEY MAP

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED No. 29587 PROFESSIONAL ENGINEER GILBERT M. HAINES

05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No: 6166-18-0770

CBMPP LEGEND

SITE PREPARATION

- CEP — CONSTRUCTION EXIT PAD
- LG — LAND GRADING

SURFACE STABILIZATION

- DC — DUST CONTROL
- GK — GROUNDSKEEPING

RUNOFF CONVEYANCE

- CD-FS — COMPOSITE FILTER SOCK/WATTLES

LEGEND

PROPOSED

- 450 — PROPOSED CONTOURS
- FINAL COVER LIMITS
- XX — SILT FENCE
- DC — EROSION AND SEDIMENT CONTROL BMP (SEE ESPC LEGEND)
- FILTER SOCK
- SURFACE RUNOFF FLOW DIRECTION
- LD — LIMITS OF DISTURBANCE
- FM — FORCEMAIN
- HEAVY VEGETATION AND CLEARING TO BE REMOVED

N

ALABAMA NAD83 WEST US SURVEY FEET

50 0 50 100 FT

REVISIONS

NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

INITIAL CBMPP

SHEET NUMBER:	REV. #
GAS_3.2.4_705	0

J:\6166-18-0770 SCS GASTON APCD DETAILED ENGINEERING\SHEET SET - APCD DETAILED ENGINEERING\GAS_3.2.4_700.dwg - 705 INITIAL CBMPP 05/29/2019 3:08pm jesse.aldridge

VEGETATION PROCESSING AREA #1

CONC. STEPS

(2) OPEN SHED ROOF W/ CONTAINERS

METAL GRATE PLATFORM

CONC. STEPS

8" PIPE

METAL GRATE CATWALK

PLATFORM AND RISER

ARTICULATED CONC. BLOCK MAT AUXILIARY SPILLWAY

EXISTING RIPRAP

CONC. OUTLET END WALL (PLUGGED)

DOUBLE ROW SILT FENCE

TRACTOR GARAGE METAL SIDING BUILDING

TRAILER

TRAILER

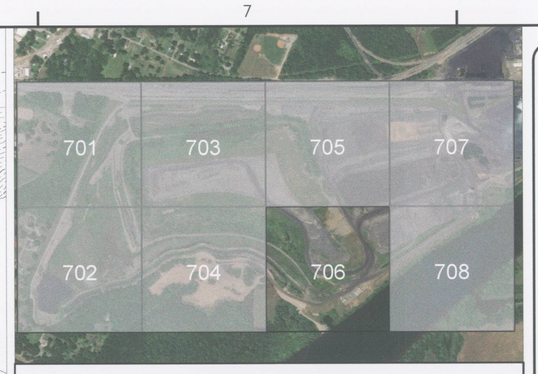
TRAILER

COOSA RIVER / LAY LAKE
APPROXIMATE NORMAL WATER SURFACE ELEVATION 396'
FERC PROJECT BOUNDARY ELEV. 406'
APPROXIMATE 100 YR ELEV. 403'

WOOD DOCK

METAL SIDING BOAT HOUSE

CONTINUED SHEET 708



KEY MAP

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER GILBERT M. HAINES No. 25997

05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No: 6166-18-0770

CBMPP LEGEND

SITE PREPARATION
- LG — LAND GRADING

SURFACE STABILIZATION
- DC — DUST CONTROL

SEDIMENT CONTROL
- SB — SEDIMENT BARRIER

LEGEND

PROPOSED
- 450 — PROPOSED CONTOURS
- FINAL COVER LIMITS
- XX — SILT FENCE
- DC — EROSION AND SEDIMENT CONTROL BMP (SEE ESPC LEGEND)
- XXXXXXXXXXXXXXXXX — FILTER SOCK
- SURFACE RUNOFF FLOW DIRECTION
- LD — LIMITS OF DISTURBANCE
- FM — FORCEMAIN
- HEAVY VEGETATION AND CLEARING TO BE REMOVED

REVISIONS

NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

INITIAL CBMPP

SHEET NUMBER:	REV. #
GAS_3.2.4_706	0

ALABAMA NAD83 WEST US SURVEY FEET

50 0 50 100 FT

KEY MAP

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED No. 25987 PROFESSIONAL ENGINEER GILBERT M. HAINES

05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

CBMPP LEGEND

SITE PREPARATION
- CEP — CONSTRUCTION EXIT PAD
- LG — LAND GRADING

SURFACE STABILIZATION
- DC — DUST CONTROL

RUNOFF CONVEYANCE
- CD-FS — COMPOSITE FILTER SOCK/WATTLES

SEDIMENT CONTROL
- SB — SEDIMENT BARRIER

LEGEND

PROPOSED
- 450 — PROPOSED CONTOURS
- FINAL COVER LIMITS
- XX — SILT FENCE
- DC — EROSION AND SEDIMENT CONTROL BMP (SEE ESPC LEGEND)
- XXXXXXXXXXXXXXXXXX — FILTER SOCK
- SURFACE RUNOFF FLOW DIRECTION
- LD — LIMITS OF DISTURBANCE
- FM — FORCEMAIN
- HEAVY VEGETATION AND CLEARING TO BE REMOVED

N

ALABAMA NAD83 WEST US SURVEY FEET

50 0 50 100 FT

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

REVISIONS

NO.	DATE	BY	APPROVED

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INITIAL CBMPP

SHEET NUMBER:	REV. #
GAS_3.2.4_707	0

J:\6166-18-0770 SCS GASTON APCD DETAILED ENGINEERING\SHEET SET - APCD DETAILED ENGINEERING\GAS_3.2.4_700.dwg - 707 INITIAL CBMPP 05/29/2019 3:08pm jesse.aldridge

SOUTH EXCAVATION AREA

TEMPORARY 14" HDPE PIPE FROM CLEAR POOL TO EVOQUA TEMPORARY WATER TREATMENT FACILITY

DOUBLE ROW SILT FENCE

DOUBLE ROW SILT FENCE

8" HDPE

COOSA RIVER / LAY LAKE
APPROXIMATE NORMAL WATER SURFACE ELEVATION 396'
FERC PROJECT BOUNDARY ELEV. 406'
APPROXIMATE 100 YR ELEV. 403'

GASTON-FAYETTEVILLE 230 KV

GASTON-GOAT ROCK #2 230 KV

GASTON-GOAT ROCK #1 230

N:1179000

N:1178750

N:1178500

N:1178250

N:1178000

N:1177750

N:1177500

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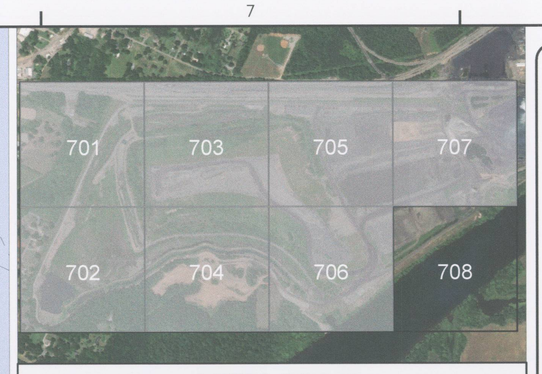

KEY MAP

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED No. 25587 PROFESSIONAL ENGINEER GILBERT M. HAINES

05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

CBMPP LEGEND

SITE PREPARATION
- LG — LAND GRADING

SURFACE STABILIZATION
- DC — DUST CONTROL

SEDIMENT CONTROL
- SB — SEDIMENT BARRIER

LEGEND

PROPOSED
- 450 — PROPOSED CONTOURS
- FINAL COVER LIMITS
- XX — SILT FENCE
- DC — EROSION AND SEDIMENT CONTROL BMP (SEE ESPC LEGEND)
- XXXXXXXXXXXXXXXXXX — FILTER SOCK
- SURFACE RUNOFF FLOW DIRECTION
- LD — LIMITS OF DISTURBANCE
- FM — FORCEMAIN
- HEAVY VEGETATION AND CLEARING TO BE REMOVED

N

ALABAMA NAD83 WEST US SURVEY FEET

50 0 50 100 FT

REVISIONS

NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

INITIAL CBMPP

SHEET NUMBER:	REV. #
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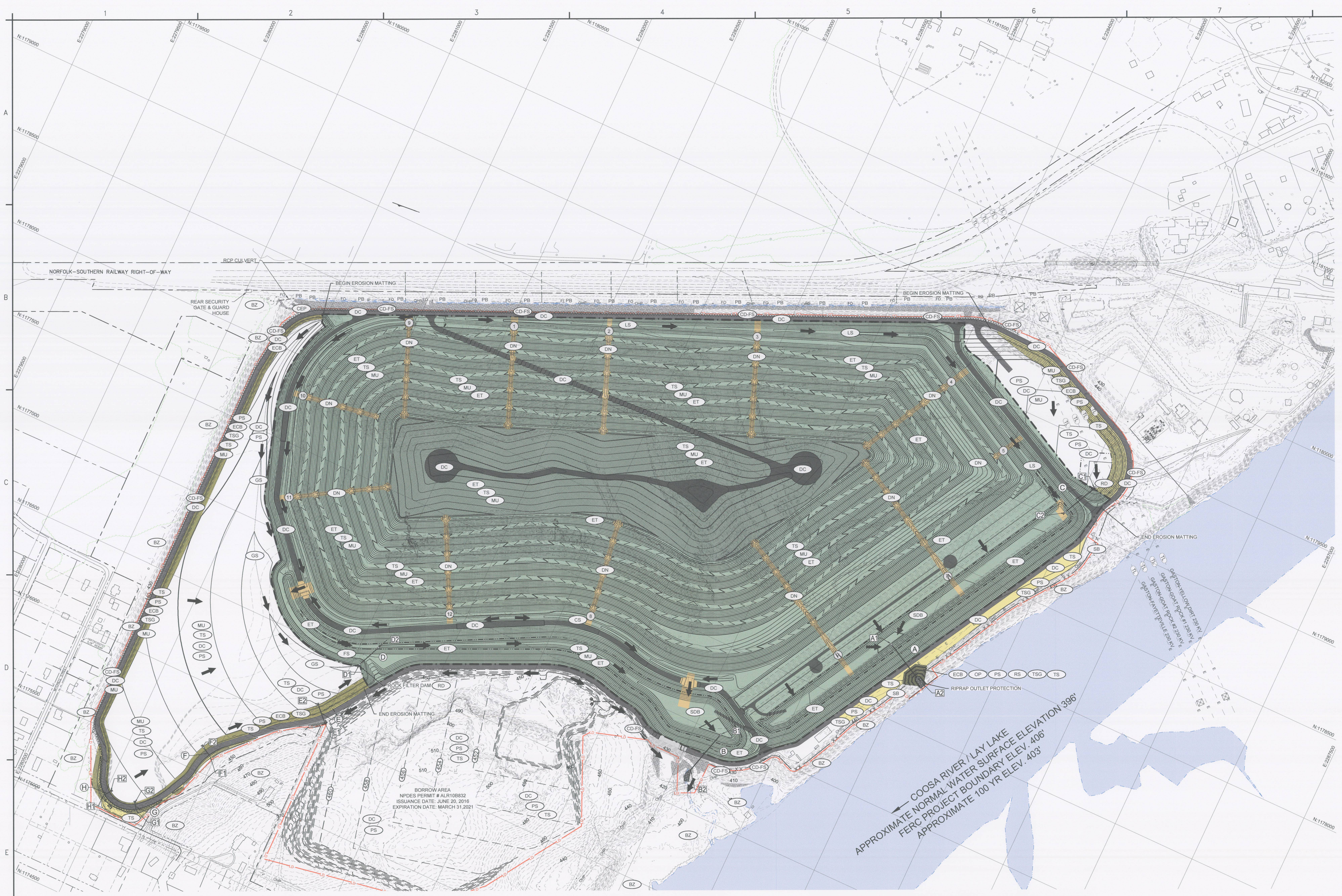


PERIMETER CHANNEL REACH CHART

UPSTREAM DOWNSLOPE CHANNEL	DOWNSTREAM DOWNSLOPE CHANNEL	BOTTOM WIDTH (ft)	SIDE SLOPE	25-YEAR VELOCITY (ft/s)	CHANNEL LINING TYPE	DESIGN MODEL CHANNEL LINING TYPE	25-YEAR FLOW RATE (cfs)	100-YEAR FLOW RATE (cfs)
1	2	10	4:1 / 4:1	3.20	ClosureTurf	Sand Infill	56.12	74.31
2	3	10	4:1 / 4:1	3.98	ClosureTurf	Sand Infill	117.40	155.63
3	4	10	4:1 / 4:1	4.57	ClosureTurf	Sand Infill	193.90	257.94
4	5	10	4:1 / 4:1	4.79	ClosureTurf	Sand Infill	232.25	310.27
5	South Pond	10	4:1 / 4:1	4.84	ClosureTurf	Sand Infill	242.04	323.64
8	West Pond	10	4:1 / 4:1	3.72	ClosureTurf	Sand Infill	92.58	122.97
9	10	10	4:1 / 4:1	2.82	ClosureTurf	Sand Infill	36.53	48.38
10	11	10	4:1 / 4:1	3.33	ClosureTurf	Sand Infill	63.14	84.09
11	West Pond	10	4:1 / 4:1	3.90	ClosureTurf	Sand Infill	110.46	147.36
12	West Pond	10	4:1 / 4:1	3.39	ClosureTurf	Sand Infill	68.29	90.92

LEGEND

PROPOSED

- 450 — PROPOSED CONTOURS
- FINAL COVER LIMITS
- 1 — DOWNSLOPE CHANNEL ID#
- TOP DECK DIVERSION BERM
- XX — SILT FENCE
- DC — CONSTRUCTION BMP (SEE CBMPP LEGEND)
- TOP DECK DIVERSION BERM AND APPROXIMATE LIMIT OF MICRODRAIN GEOMEMBRANE
- CLOSURETURF EXTENTS WITH SAND INFILL
- HYDROBINDER INFILL
- EROSION CONTROL MATTING
- XXXXXXXXXXXXXXXXXX — FILTER SOCK
- SURFACE RUNOFF FLOW DIRECTION
- HEAVY DUTY ACCESS ROAD

CBMPP LEGEND

SITE PREPARATION
- TSG — TOP SOILING

SURFACE STABILIZATION
- DC — DUST CONTROL
- ET — ENGINEERED TURF
- ECB — EROSION CONTROL BLANKET
- MU — MULCHING
- PS — PERMANENT SEEDING
- OP — OUTLET PROTECTION
- RS — RIPRAP LINED SWALE
- TS — TEMPORARY SEEDING

RUNOFF CONVEYANCE
- CD-FS — COMPOSITE FILTER SOCK/WATTLES
- DN — DOWNSLOPE CHANNEL
- GS — GRASS SWALE
- LS — LINED SWALE

SEDIMENT CONTROL
- RD — ROCK FILTER DAM
- SB — SEDIMENT BARRIER

STORMWATER MANAGEMENT
- SDB — STORMWATER DETENTION BASIN

STREAM PROTECTION
- BZ — BUFFER ZONE
- CS — CHANNEL STABILIZATION

ALABAMA NAD83 WEST US SURVEY FEET
200 0 200 400 FT

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421–3400

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 25587 GILBERT M. HAINES
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON
31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No: 6166–18–0770

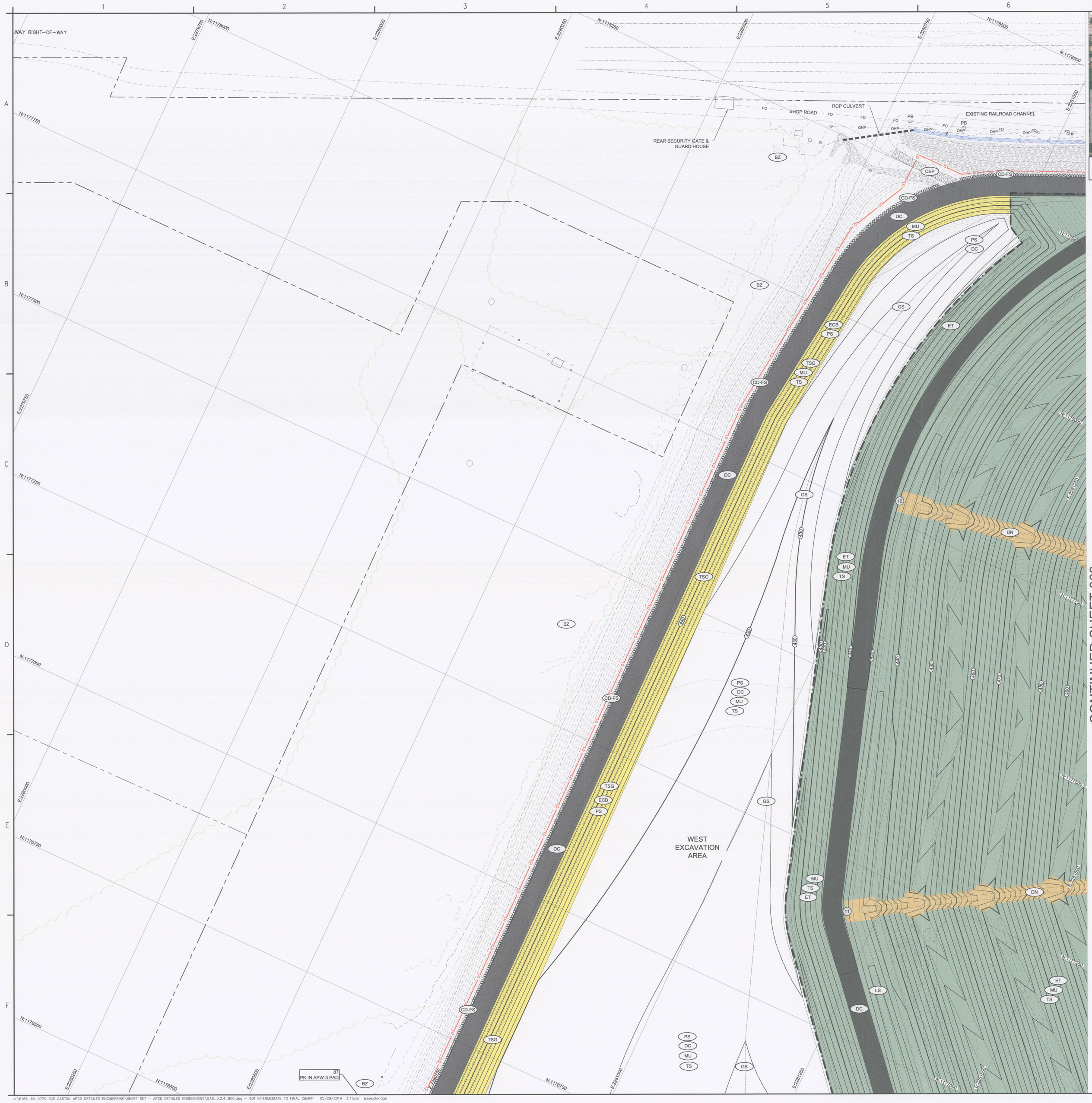
REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

OVERALL INTERMEDIATE TO FINAL CBMPP

SHEET NUMBER:	REV. #
GAS_3.2.4_800	0



CONTINUED SHEET 803

KEY MAP

CBMPP LEGEND

SITE PREPARATION
- TSG — TOP SOILING

SURFACE STABILIZATION
- DC — DUST CONTROL
- ET — ENGINEERED TURF
- ECB — EROSION CONTROL BLANKET
- MU — MULCHING
- PS — PERMANENT SEEDING
- TS — TEMPORARY SEEDING

RUNOFF CONVEYANCE
- CD-FS — COMPOSITE FILTER SOCK/WATTLES
- DN — DOWNSLOPE CHANNEL
- GS — GRASS SWALE

STREAM PROTECTION
- BZ — BUFFER ZONE

LEGEND

PROPOSED
- 450 — PROPOSED CONTOURS
- FINAL COVER LIMITS
- 1 — DOWNSLOPE CHANNEL ID#
- TOP DECK DIVERSION BERM
- XX — SILT FENCE
- DC — CONSTRUCTION BMP (SEE CBMPP LEGEND)
- TOP DECK DIVERSION BERM AND APPROXIMATE LIMIT OF MICRODRAIN GEOMEMBRANE
- CLOSURETURF EXTENTS WITH SAND INFILL
- HYDROBINDER INFILL
- EROSION CONTROL MATTING
- XXXXXXXXXXXXXXXXXX — FILTER SOCK
- SURFACE RUNOFF FLOW DIRECTION
- HEAVY DUTY ACCESS ROAD

N

ALABAMA NAD83 WEST US SURVEY FEET

50 0 50 100 FT

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED No. 25987 PROFESSIONAL ENGINEER GILBERT M. HAINES

05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

REVISIONS

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DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

INTERMEDIATE TO FINAL CBMPP

SHEET NUMBER:	REV. #
GAS_3.2.4_801	0

KENNEDY AVENUE

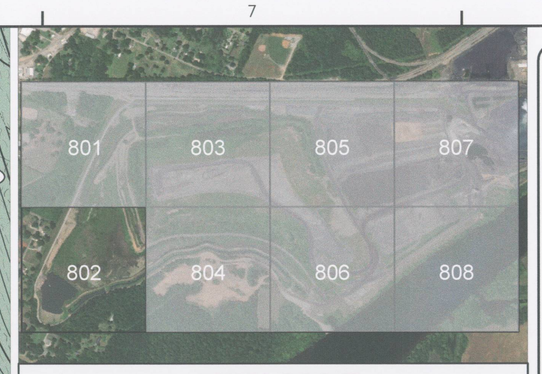
MITCHELL STREET

EXISTING RESIDENCE (TYP.)

WEST EXCAVATION AREA

EXISTING RESIDENCE

CONTINUED SHEET 804



KEY MAP

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER NO. 25997 GILBERT M. HAINES

05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No: 6166-18-0770

CBMPP LEGEND

SITE PREPARATION
- TSG — TOP SOILING

SURFACE STABILIZATION
- DC — DUST CONTROL
- ET — ENGINEERED TURF
- ECB — EROSION CONTROL BLANKET
- MU — MULCHING
- PS — PERMANENT SEEDING
- TS — TEMPORARY SEEDING

RUNOFF CONVEYANCE
- CD-FS — COMPOSITE FILTER SOCK/WATTLES
- DN — DOWNSLOPE CHANNEL
- GS — GRASS SWALE

STREAM PROTECTION
- BZ — BUFFER ZONE

LEGEND

PROPOSED
- 450 — PROPOSED CONTOURS
- FINAL COVER LIMITS
- 1 — DOWNSLOPE CHANNEL ID#
- TOP DECK DIVERSION BERM
- XX — SILT FENCE
- DC — CONSTRUCTION BMP (SEE CBMPP LEGEND)
- TOP DECK DIVERSION BERM AND APPROXIMATE LIMIT OF MICRODRAIN GEOMEMBRANE
- CLOSURETURF EXTENTS WITH SAND INFILL
- HYDROBINDER INFILL
- EROSION CONTROL MATTING
- XXXXXXXXXXXXXXXXXX — FILTER SOCK
- SURFACE RUNOFF FLOW DIRECTION
- HEAVY DUTY ACCESS ROAD

N

ALABAMA NAD83 WEST US SURVEY FEET

50 0 50 100 FT

REVISIONS

NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

INTERMEDIATE TO FINAL CBMPP

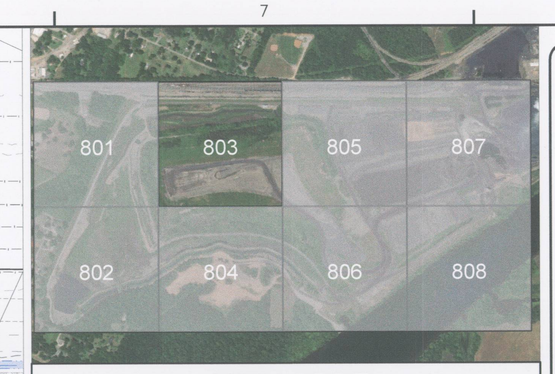
SHEET NUMBER:	REV. #
GAS_3.2.4_802	0

J:\6166-18-0770 SCS GASTON APCD DETAILED ENGINEERING\SHEET SET - APCD DETAILED ENGINEERING\GAS_3.2.4_800.dwg - 802 INTERMEDIATE TO FINAL CBMPP 05/29/2019 3:15pm jesse.aldridge

EXISTING RAILROAD CULVERT (TYP.)

RIPRAP

CONTINUED SHEET 805



KEY MAP

wood.

1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 25587 GILBERT M. HAINES

05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

CBMPP LEGEND

SURFACE STABILIZATION

- DC — DUST CONTROL
- ET — ENGINEERED TURF
- MU — MULCHING
- TS — TEMPORARY SEEDING

RUNOFF CONVEYANCE

- CD-FS — COMPOSITE FILTER SOCK/WATTLES
- DN — DOWNSLOPE CHANNEL

LEGEND

PROPOSED

- 450 — PROPOSED CONTOURS
- FINAL COVER LIMITS
- 1 — DOWNSLOPE CHANNEL ID#
- TOP DECK DIVERSION BERM
- XX — SILT FENCE
- DC — CONSTRUCTION BMP (SEE CBMPP LEGEND)
- TOP DECK DIVERSION BERM AND APPROXIMATE LIMIT OF MICRODRAIN GEOMEMBRANE
- CLOSURETURF EXTENTS WITH SAND INFILL
- HYDROBINDER INFILL
- EROSION CONTROL MATTING
- XXXXXXXXXXXXXXXXX — FILTER SOCK
- SURFACE RUNOFF FLOW DIRECTION
- HEAVY DUTY ACCESS ROAD

N

ALABAMA NAD83 WEST US SURVEY FEET

50 0 50 100 FT

REVISIONS

NO.	DATE	BY	APPROVED

DESIGNED BY:	J. ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

INTERMEDIATE TO FINAL CBMPP

SHEET NUMBER:	REV. #
GAS_3.2.4_803	0

KEY MAP

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 25987 GILBERT M. HAINES
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

CBMPP LEGEND

SITE PREPARATION
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SEDIMENT CONTROL
- RD — ROCK FILTER DAM

STORMWATER MANAGEMENT
- SDB — STORMWATER DETENTION BASIN

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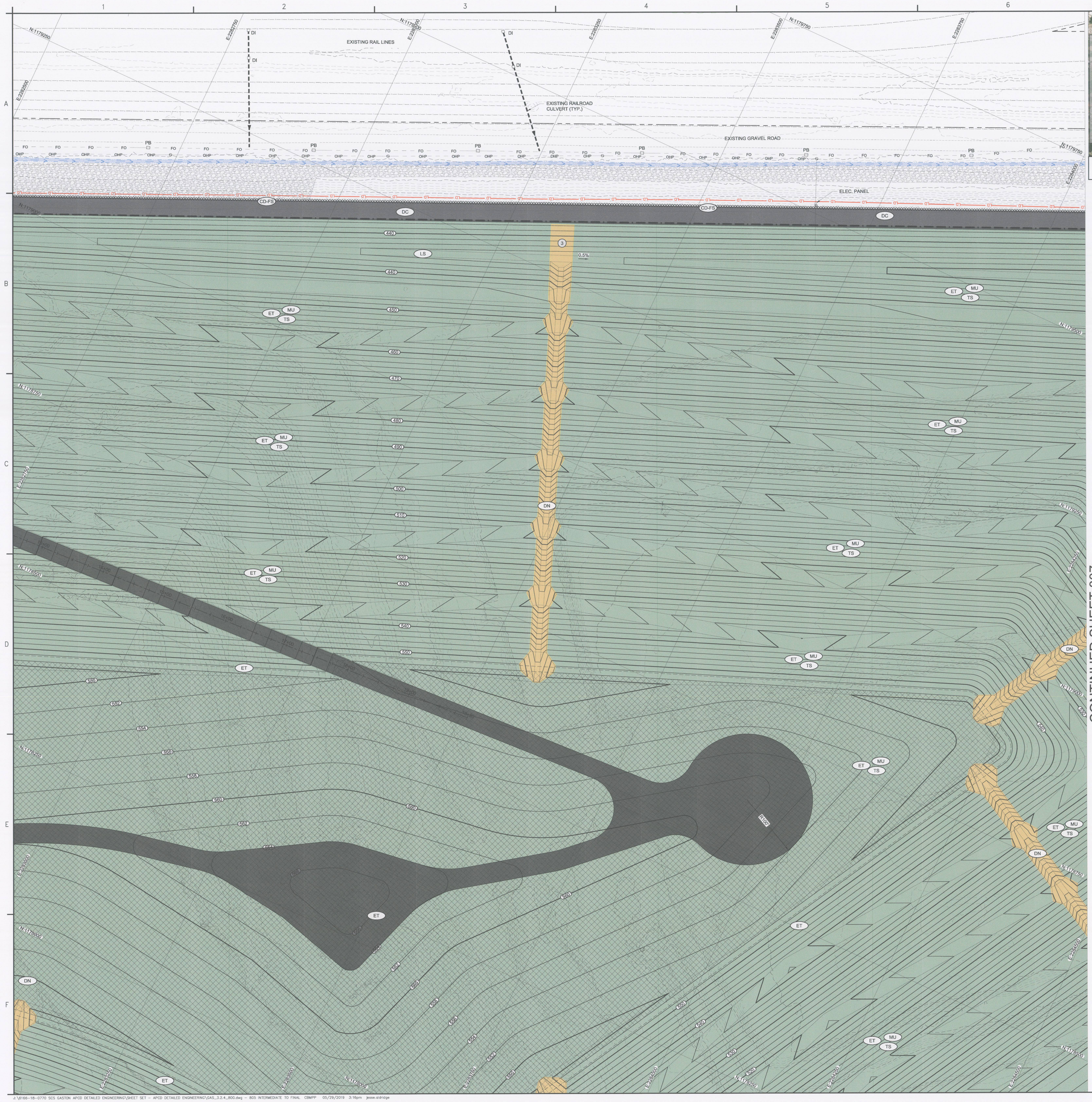

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PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
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REVISIONS

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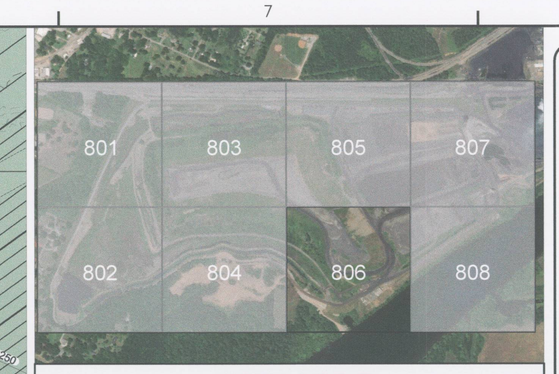

KEY MAP

CONTINUED SHEET 808

CBMPP LEGEND

SITE PREPARATION
- TSG — TOP SOILING

SURFACE STABILIZATION
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05/29/19

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Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No: 6166-18-0770

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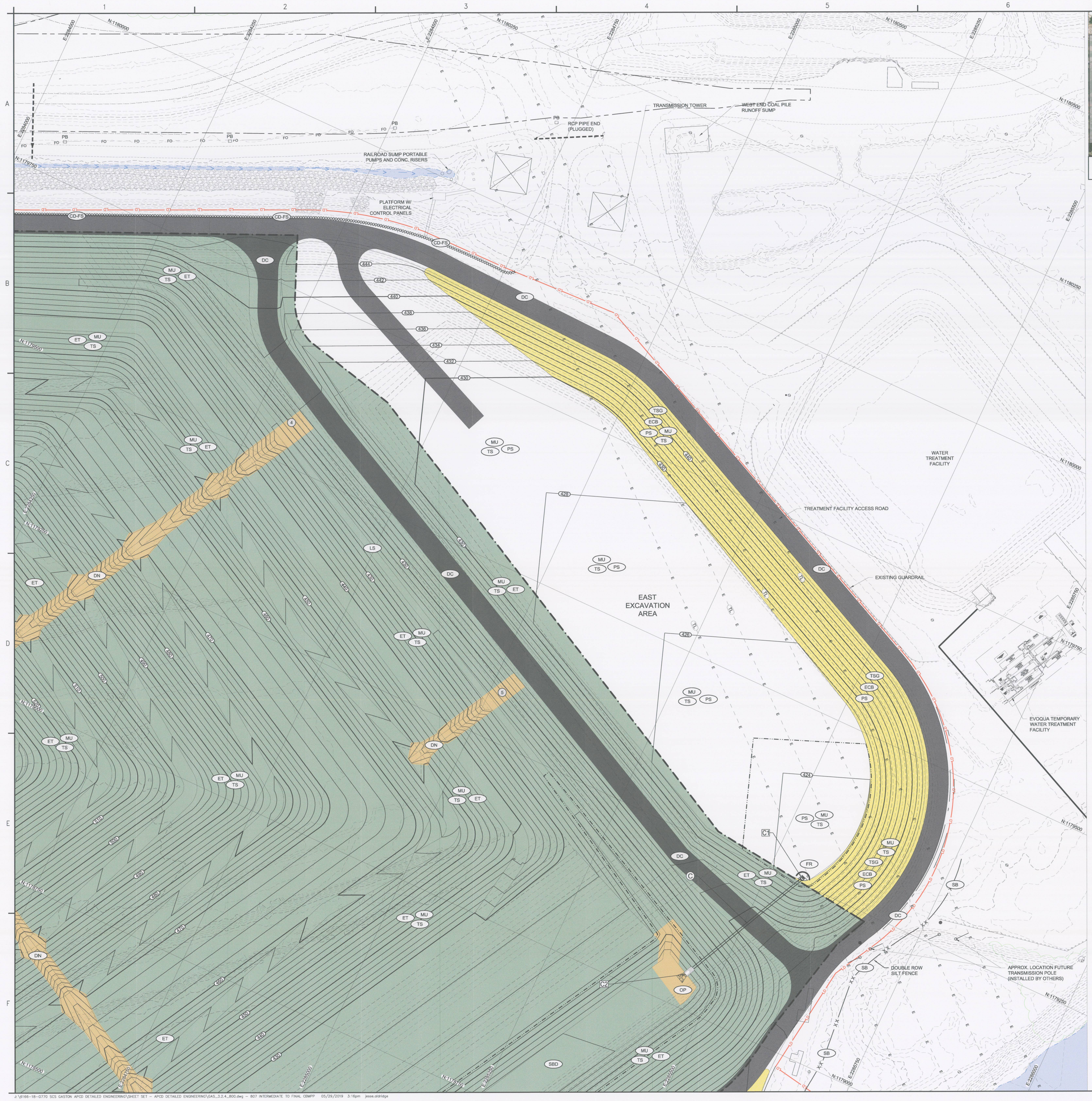

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ALABAMA LICENSED PROFESSIONAL ENGINEER GILBERT M. HAINES No. 25937
05/29/19

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PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No: 6166-18-0770

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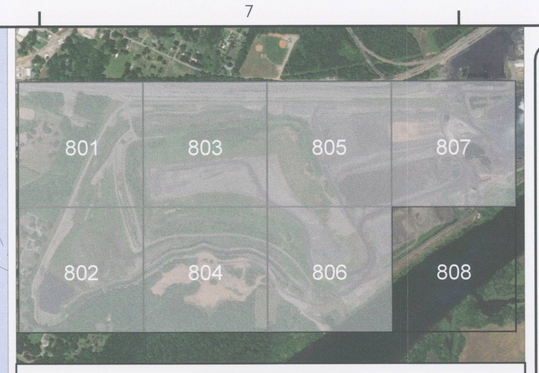

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GAS_3.2.4_808	0

1.0 SITE EVALUATION, ASSESSMENT AND PLANNING

1.1 PROJECT SITE INFORMATION

PROJECT/SITE NAME: PLANT E.C. GASTON ASH POND CLOSURE DESIGN
PROJECT STREET/LOCATION: 31972 HIGHWAY 25
CITY: WILSONVILLE STATE: AL ZIP CODE: 35186
COUNTY OR SIMILAR SUBDIVISION: SHELBY COUNTY
LATITUDE: 33°15'03.99" N LONGITUDE: -86°28;17.40" W

1.2 CONTACT INFORMATION/RESPONSIBLE PARTIES

OWNER/DEVELOPER: ALABAMA POWER
31972 HIGHWAY 25
WILSONVILLE, AL 35186

PREPARER: WOOD
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
(770) 421-3400

PROJECT MANAGER OR SITE SUPERVISOR: SOUTHERN COMPANY SERVICES
D. BRIAN BARHAM
3535 COLONNADE PARKWAY, S 360 EC
BIRMINGHAM, AL 35243
(770) 669-8185

CBMMPP CONTACT(S)/QCP: ALABAMA POWER COMPANY
PAM MCDANIEL, PE
600 18TH STREET NORTH
BIRMINGHAM, AL 35203-2226
(205) 966-6256

QCI OR QUALIFIED PERSON(S): ALABAMA POWER COMPANY
JESSICA SMOKE
600 18TH STREET NORTH
BIRMINGHAM, AL 35203-2226
(205) 529-3893

EMERGENCY 24-HR CONTACT: WAYMON TULLIS
(205) 288-6369

1.3 NATURE AND SEQUENCE OF CONSTRUCTION ACTIVITY

1. DESCRIPTION OF THE GENERAL SCOPE OF THE WORK FOR THE PROJECT AND MAJOR PHASES OF THE CONSTRUCTION:
THE PROJECT INCLUDES THE CONSTRUCTION FOR THE PLANT GASTON ASH POND CLOSURE. THE ASH POND IS LOCATED SOUTH AND WEST OF THE PLANT ENCOMPASSING APPROXIMATELY 269 ACRES. A HYBRID CLOSURE APPROACH WAS SELECTED FOR THE PLANT GASTON ASH POND WHICH INCLUDES CLOSURE-IN-PLACE BY CONSOLIDATING CCR TO REDUCE THE CLOSURE FOOTPRINT BY EXCAVATING CCR ALONG THE SOUTH DIKE, THE WEST AREA AND EASTERN END OF THE ASH POND. THE CLOSURE BY REMOVAL AREAS WILL THEN BE BACKFILLED WITH COMPACTED SOIL TO ALLOW STORMWATER FLOW. THE AREA OF CLOSURE BY REMOVAL IS APPROXIMATELY 77 ACRES (47 ACRES IN THE WEST AREA, 11 ACRES IN THE EAST AREA AND 19 ACRES IN THE SOUTH AREA) RESULTING IN A TOTAL ASH POND CLOSURE FOOTPRINT OF 192 ACRES. THE FINAL COVER SYSTEM WILL INCLUDE A 50-MIL LINEAR LOW DENSITY POLYETHYLENE (LLDPE) STRUCTURED GEOMEMBRANE AND AN ENGINEERED TURF PRODUCT. THE ASH STACK SIDE SLOPES WILL BE GRADED TO A MAXIMUM OF FOUR FOOT HORIZONTAL TO ONE FOOT VERTICAL WITH 20 FOOT TERRACES AT 20 FOOT VERTICAL INTERVALS PRIOR TO CONSTRUCTION OF THE FINAL COVER SYSTEM. 5 PERCENT MINIMUM SLOPES WERE USED FOR THE TOP DECK OF THE CCR FILL WHICH WAS GRADED TO DRAIN TOWARDS THE PROPOSED LINED STORMWATER PONDS LOCATED ALONG THE SOUTH DIKE AND THE SOUTHWEST DISCHARGE LOCATION OF THE ASH POND. THE CONSTRUCTION WILL TAKE PLACE WITHIN THE DIKES OF THE ASH POND WITHOUT STORMWATER RELEASES. WATER WILL BE COLLECTED WITHIN THE ASH POND AND CONVEYED TO AN ON-SITE TREATMENT FACILITY BEFORE DISCHARGING TO THE COOSA RIVER. FINAL CONDITION LINED STORMWATER PONDS WILL BE CONSTRUCTED TO RELEASE STORMWATER FROM THE POST-CLOSURE CONDITION.

THE STORMWATER MANAGEMENT PRACTICES OUTLINED IN THIS PLAN APPLY TO ALL CONSTRUCTION WITHIN THE DISTURBED AREA. ALL CONSTRUCTION ACTIVITIES WITHIN THE 269 ACRE ASH POND WILL OCCUR UNDER THE SUPERVISION OF ALABAMA POWER COMPANY UNLESS OTHERWISE SPECIFIED.

ALL CONTRACTORS AND SUBCONTRACTORS INVOLVED IN CONSTRUCTION ACTIVITIES AT THE SITE WILL BE MADE AWARE OF THE REQUIREMENT TO IMPLEMENT THE BEST MANAGEMENT PRACTICES (BMPS) OUTLINED IN THIS PLAN. A COPY OF THE NOI SUBMITTED TO THE ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (ADEM) FOR APPROVAL AND REGISTRATION FOR A CONSTRUCTION NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT AND CURRENT GENERAL PERMIT ARE TO BE MAINTAINED.

THE PERMITTEE SHALL POST AND MAINTAIN SIGN(S) AT THE FRONT EMPLOYEE PARKING AREA TO ADEQUATELY IDENTIFY THE SITE PRIOR TO COMMENCEMENT OF AND DURING NPDES CONSTRUCTION UNTIL PERMIT COVERAGE IS PROPERLY TERMINATED. SUCH SIGN SHALL DISPLAY THE NAME OF THE PERMITTEE, "ADEM NPDES ALR10" FOLLOWED BY THE FIVE DIGIT NPDES PERMIT NUMBER, FACILITY OR PROJECT NAME AND OTHER DESCRIPTIVE INFORMATION DEEMED APPROPRIATE BY THE PERMITTEE.

THE SEQUENCE OF ANTICIPATED ACTIVITIES ASSOCIATED WITH CONSTRUCTION PROJECTS WILL GENERALLY OCCUR AS FOLLOWS:

- INSTALLATION OF EROSION AND SEDIMENT CONTROL DEVICES WITH MAINTENANCE THROUGHOUT THE LIFE OF THE PROJECT
- REMOVAL, MANAGEMENT AND TRANSFER OF FREE WATER FROM THE ASH POND TO THE WATER TREATMENT SYSTEM
- CLEARING AND PROCESSING OF VEGETATION
- DEWATERING OF WET UNDRAINED ASH WITHIN THE EAST, SOUTH AND WEST AREAS THAT WILL BE CLOSED BY REMOVAL AS WELL AS WITHIN THE ASH STACK AREA
- EXCAVATION AND REMOVAL OF WET UNDRAINED ASH AND DRY ASH TO CREATE THE EAST, SOUTH AND WEST STORMWATER PONDS AS WELL AS TO ESTABLISH CLOSURE BY REMOVAL IN THESE AREAS PRIOR TO RECEIVING SOIL BACKFILL
- PLACEMENT AND COMPACTION OF SOIL MATERIAL TO BACKFILL THE EAST, WEST AND SOUTH STORMWATER POND AREAS
- EXCAVATION AND REMOVAL OF WET UNDRAINED ASH AND DRY ASH WITHIN THE EXISTING ASH STACK AREA
- HAULING, PLACING, COMPACTING AND GRADING EXISTING AND RELOCATED ASH TO THE PROPOSED FINAL GRADES
- INSTALLATION OF THE ENGINEERED TURF FINAL COVER SYSTEM AS WELL AS GEOMEMBRANE LINER AND BALLAST SYSTEM
- INSTALLATION OF STORM DISCHARGE PIPING
- FUGITIVE DUST CONTROL THROUGHOUT ALL PHASES OF CONSTRUCTION
- RESTORATION OF THE PROJECT SITE INCLUDING STONE SURFACING AND FINAL VEGETATION

DRAWINGS INDICATING THE LOCATION, TOPOGRAPHY AND FEATURES OF THE SITE ARE PROVIDED WITHIN THE CBMPP DRAWINGS WITH SPECIFIC BMP LOCATIONS. AS PROJECT PLANS FOR SITE DEVELOPMENT ARE FINALIZED, MAPS INDICATING THE PRE- AND POST-CONSTRUCTION SITE FEATURES OF THE PROPOSED DEVELOPMENT(S), INCLUDING SPECIFIC PLACEMENT, INSTALLATION AND MAINTENANCE SPECIFICATIONS OF BMPS, WILL BE INCLUDED IN ADDITIONAL UPDATED DRAWINGS. THE ANTICIPATED DURATION OF PROJECT PHASES IS DESCRIBED IN SECTION 2.1.

2. PROPOSED ACTIVITY(IES) TO BE CONDUCTED: INDUSTRIAL

3. DESCRIPTION OF CONSTRUCTION, NON-COAL MINING OR MATERIALS MANAGEMENT ACTIVITY:

CONSTRUCTION WASTE CONSISTING OF UNSUITABLE MATERIAL FOR USE AS A FILL OR BACKFILL MATERIAL WILL BE STOCKPILED AND PROPERLY STABILIZED. CONSTRUCTION WASTE CONSISTING OF EXCESS MATERIAL, TRASH AND DEBRIS WILL BE PROPERLY CONTAINED IN WASTE RECEPTACLES (ROLL-OFFS, BINS OR 55-GALLON DRUMS) UNTIL THE WASTE CAN BE PROPERLY RECYCLED OR DISPOSED OF OFF-SITE AT AN ADEM APPROVED LANDFILL.

1.4 RECEIVING WATERS

COOSA RIVER/LAY LAKE HAVE BEEN IDENTIFIED AS RECEIVING WATERS

1.5 POTENTIAL SOURCES OF POLLUTION

NO POTENTIAL SOURCES OF POLLUTION ARE ANTICIPATED AS WATER MANAGEMENT SHALL OCCUR.

2.0 EROSION AND SEDIMENT CONTROL BMPS

2.1 PHASED CONSTRUCTION ACTIVITY:

REFER TO SECTION 1.3 NATURE AND SEQUENCE OF CONSTRUCTION ACTIVITY

2.2 CONTROL STORMWATER FLOWING ONTO AND THROUGH THE PROJECT:

REFER TO SECTION 1.5 POTENTIAL SOURCES OF POLLUTION

2.3 STABILIZE SOILS:

DURING THE CONSTRUCTION PHASE, DUST WILL BE CONTROLLED ON DISTURBED SOILS. DISTURBED SOILS THAT WILL REMAIN INACTIVE FOR LONGER THAN 13 DAYS WILL BE TEMPORARILY STABILIZED USING TEMPORARY SEED AND MULCH OR TEMPORARY SYNTHETIC COVERS. DISTURBED SOILS OUTSIDE OF THE FINAL COVER SYSTEM THAT HAVE REACHED FINAL GRADE WILL BE PERMANENTLY STABILIZED WITH PERMANENT VEGETATION (SOD, PERMANENT SEEDING OR OTHER LANDSCAPE METHODS).

1. DUST CONTROL

VARIOUS MEANS AND METHODS WILL BE EMPLOYED TO CONTROL DUST WITHIN THE SITE AND ON THE HAUL ROUTES.

THIS SITE HAS A VARIETY OF IDENTIFIED POTENTIAL FUGITIVE DUST SOURCES. THE DUST SOURCES ANTICIPATED ON THIS PROJECT INCLUDE:

A. CCR EXCAVATION IN THE DRIER PORTIONS OF THE IMPOUNDMENT

B. EXISTING CCR AREAS NOT COVERED WITH VEGETATION

C. DESIGNATED AREAS WHERE ASH IS BEING STOCKPILED FOR DEWATERING PURPOSES

D. TRANSFER OF CCR FROM THE EXCAVATION AREA TO THE FILL AREA AROUND THE EXISTING STACK

E. TRANSPORT OF OFFSITE SOIL BORROW MATERIAL TO THE DESIGNATED STOCKPILE

F. BORROW MATERIAL STOCKPILE AREA

G. TRANSPORT OF BORROW MATERIAL FROM THE STOCKPILE AREA TO SOIL BACKFILL AREAS ON-SITE

H. PLACEMENT OF SAND, HYDRO-BINDER OR SIMILAR IN FILL PRODUCTS IN THE PROPOSED FINAL COVER AREA

MANAGEMENT OF THESE IDENTIFIED SOURCES OF DUST WILL REQUIRE AN ONGOING EFFORT STARTING FROM THE COMMENCEMENT OF CONSTRUCTION OPERATIONS TO PROJECT COMPLETION.

TO COMBAT THIS FUGITIVE DUST DURING THE EXCAVATION AND PLACEMENT OF CCR, THE CONTRACTOR WILL UTILIZE A VARIETY OF METHODS. METHODS WHICH WILL IMPLEMENT A PROCEDURAL TYPE OF CONTROL ALLOWING THEM TO LIMIT THE AMOUNT OF AREA EXPOSED AT ANY ONE TIME. EXISTING VEGETATION WILL BE LEFT IN PLACE AS LONG AS POSSIBLE, MINIMIZING THE AMOUNT OF ASH EXPOSED AT ANY ONE TIME. THEY WILL ALSO COMBAT DUST WITH THE DISPERSION OF WATER WITH WATER TRUCKS AND WATER WAGONS.

WHEN PRACTICAL AND FEASIBLE, IRRIGATION SYSTEMS WILL BE USED TO CONTROL DUST IN EXPOSED AREAS WHERE MINIMAL CONSTRUCTION ACTIVITY IS TAKING PLACE. EXTREME CONDITIONS MAY BE CAUSE FOR THE USE OF POLYMERS AND PRODUCTS LIKE WIND DEFENDER WHEN CONVENTIONAL METHODS ARE NOT SUCCESSFUL. EACH ACTIVITY AND AREA OF CONSTRUCTION WILL BE EVALUATED AND ADDRESSED BY EACH AREA'S SPECIFIC CHARACTERISTICS AND NEEDS.

THE WATER SUPPLY FOR THE ONGOING DUST CONTROL EFFORTS WILL BE PROVIDED BY MULTIPLE SOURCES DEPENDING ON WHICH STAGE OF CONSTRUCTION IS BEING EXECUTED. DURING THE INITIAL AND INTERMEDIATE STAGES OF CONSTRUCTION, UTILIZATION OF THE TEMPORARY HOLDING PONDS WILL SUPPLY A MAJORITY OF THE WATER NEEDED. WATER PROVIDED FROM THE RIVER AND POTENTIALLY THE PLANT'S WASTE WATER TREATMENT POND WILL ALSO BE UTILIZED AS NEEDED. AS THE PROJECT PROGRESSES AND CCR IS COVERED WITH THE DESIGNED CLOSURE SYSTEM, THERE WILL BE LESS VOLUME OF WATER NEEDED TO COMBAT DUST. HOWEVER, DUST SUPPRESSION WILL STILL NEED TO BE CONTROLLED UNTIL PROJECT COMPLETION. DURING THESE FINAL STAGES OF CONSTRUCTION, CLEAN WATER COLLECTED AND HELD IN TEMPORARY HOLDING AREAS ATOP THE CLOSURE TURF CAN ALSO BE UTILIZED AS A SOURCE OF WATER TO ASSIST WITH DUST CONTROL.

2. MULCH

A. INSTALLATION:
- APPLICATION OF MULCH TO DISTURBED AREAS PROVIDES PROTECTION FOR EXPOSED SOILS FROM THE EROSIVE EFFECTS OF RAIN DROPS AND WIND.
- MULCH WILL BE USED WITH TEMPORARY OR PERMANENT SEED TO PROVIDE PROTECTION FROM RAIN OR WIND EXPOSURE.
- MULCH WILL ALSO PROVIDE MOISTURE CONTROL TO ASSIST IN DUST CONTROL AND SEED GERMINATION.
- SPREAD HAY OR MULCH UNIFORMLY OVER THE AREA BY HAND OR WITH A POWER BLOWER UNTIL LESS THAN 25% TO 35% OF THE GROUND IS VISIBLE (1.5 TO 2 TON/ACRE).
- TACK HAY OR MULCH INTO SOIL SURFACE TO PREVENT WIND DISPLACEMENT.

E. MAINTENANCE:
- INSPECT ALL GRADED AREAS DAILY AND AFTER EACH STORM EVENT FOR EROSION AND DAMAGE.
- MAKE REPAIRS WITHIN 24 HOURS AND RESTORE TO ORIGINAL CONDITION.

C. INSPECTION:
- INSPECTION BY THE CONTRACTOR (DAILY); QCP/QCI (MONTHLY OR AFTER 0.75" 24-HOUR OR GREATER RAIN EVENT). MAKE REQUIRED REPAIRS IMMEDIATELY.

3. PERMANENT SEEDING/MULCH

A. INSTALLATION:
- DISTURBED SOILS THAT HAVE REACHED FINAL GRADE WILL BE PERMANENTLY STABILIZED WITH PERMANENT VEGETATION (SOD, PERMANENT SEEDING OR OTHER LANDSCAPE METHODS).
- REMOVE STUMPS, ROOTS AND OTHER DEBRIS FROM THE SITE BEFORE SEEDING AND MULCHING.
- GRADE AREA TO PERMIT THE USE OF EQUIPMENT FOR SEEDING AND MULCHING.
- LOOSEN COMPACTED SOILS TO A DEPTH OF 6" TO 8" WITH APPROPRIATE TILLAGE EQUIPMENT.
- THE JOB SITE IS LOCATED IN THE NORTHERN ALABAMA GEOGRAPHIC AREA. MAKE PLANTINGS BASED UPON SPECIFIED PLANTING PERIOD.
- SPREAD SEED AT APPROPRIATE SPREAD RATES ACCORDING TO HANDBOOK DETAILS PROVIDED FOR BMP'S.
- IF NEEDED, INCORPORATE LIME IN THE SEEDBED PREPARATION, BASED UPON SOIL TEST.
- IF NEEDED, APPLY FERTILIZER DURING SEEDBED PREPARATION, BASED UPON SOIL TEST.
- SPREAD HAY OR MULCH UNIFORMLY OVER THE AREA BY HAND OR WITH A POWER BLOWER UNTIL LESS THAN 25% TO 35% OF THE GROUND IS VISIBLE (1.5 TO 2 TON/ACRE).
- TACK HAY OR MULCH INTO SOIL SURFACE TO PREVENT WIND DISPLACEMENT.
- IF NEEDED, APPLY 30 LBS/ACRE OF NITROGEN FERTILIZER AFTER GERMINATION, BASED UPON SOIL TEST.
- PROVIDE ADEQUATE WATER SUPPLY AS NEEDED FOR GERMINATION, DEVELOPMENT AND MAINTENANCE.

B. MAINTENANCE:
- INSPECT ALL SEED/MULCHED AREAS DAILY AND AFTER EACH STORM EVENT FOR EROSION AND DAMAGE.
- MAKE REPAIRS WITHIN 24 HOURS AND RESTORE TO ORIGINAL CONDITION.
- ADJUST MOWER HEIGHT TO PREVENT PLASTIC NETTING USED FROM WRAPPING AROUND MOWER BLADES.
- BARE AND ERODED AREAS SHOULD BE ADDRESSED BY RE-INSTALLING WITH THE INSTALLATION STEPS ABOVE.

C. INSPECTION:
- INSPECTION BY THE CONTRACTOR (DAILY); QCP/QCI (MONTHLY OR AFTER 0.75" 24-HOUR OR GREATER RAIN EVENT). MAKE REQUIRED REPAIRS IMMEDIATELY.

4. SODDING

A. INSTALLATION:
- SOD WILL BE INSTALLED IN PHASES, FOLLOWING THE COMPLETION OF CONSTRUCTION ACTIVITIES WITHIN THE PROJECT AREA.
- AREA TO BE SODDED WILL BE PREPARED PRIOR TO DELIVERY OF SOD TO REDUCE LAG TIME BETWEEN DELIVERY AND INSTALLATION.
- DURING STAGING, SOD SHOULD BE PROTECTED FROM DIRECT SUN. SOD SHOULD REMAIN MOIST DURING STAGING AND INSTALLATION ACTIVITIES.
- ENSURE AREA TO BE SODDED IS WELL PREPARED - LARGE ROOTS AND OTHER DEBRIS HAVE BEEN REMOVED. ENSURE SITE HAS REACHED FINAL GRADE. COMPACTION OF SOILS WITHIN THE AREA TO BE SODDED SHOULD BE MINIMIZED.
- IF NEEDED, PRIOR TO SOD INSTALLATION, INCORPORATE LIME IN THE SEEDBED PREPARATION, BASED UPON SOIL TESTS.
- IF NEEDED, PRIOR TO SOD INSTALLATION, APPLY FERTILIZER DURING SEEDBED PREPARATION, BASED UPON SOIL TESTS.
- SOD STRIPS SHOULD BE INSTALLED PERPENDICULAR TO SLOPES IN SWALES OR OTHER SLOPING FEATURES.
- THE JOB SITE IS LOCATED IN THE NORTHERN ALABAMA GEOGRAPHIC AREA. MAKE PLANTINGS BASED UPON SPECIFIED PLANTING PERIOD.
- IF NEEDED, APPLY 30 LBS/ACRE OF NITROGEN FERTILIZER AFTER ESTABLISHMENT, BASED UPON SOIL TESTS.
- PROVIDE ADEQUATE WATER SUPPLY AS NEEDED FOR ESTABLISHMENT AND MAINTENANCE.

B. MAINTENANCE:
- INSPECT ALL SODDED AREAS DAILY AND AFTER EACH STORM EVENT FOR EROSION AND DAMAGE.
- MAKE REPAIRS WITHIN 24 HOURS AND RESTORE TO ORIGINAL CONDITION.
- AREA WHERE SOD IS NOT WELL ESTABLISHED SHOULD BE ADDRESSED BY RE-INSTALLING WITH THE INSTALLATION STEPS ABOVE.
- SODDED AREAS SHOULD BE IRRIGATED FREQUENTLY DURING THE ESTABLISHMENT PERIOD.

C. INSPECTION:
- INSPECTION BY THE CONTRACTOR (DAILY); QCP/QCI (MONTHLY OR AFTER 0.75" 24-HOUR OR GREATER RAIN EVENT).
- MAKE REQUIRED REPAIRS IMMEDIATELY.

5. TEMPORARY SEEDING/MULCH

A. INSTALLATION:
- TEMPORARY STABILIZATION OF DISTURBED AREAS ON ANY PORTION OF THE SITE MUST BE INITIATED IMMEDIATELY WHENEVER WORK TOWARDS PROJECT COMPLETION AND FINAL STABILIZATION HAS TEMPORARILY CEASED AND WILL NOT RESUME FOR AT LEAST 13 DAYS.
- REMOVE STUMPS, ROOTS AND OTHER DEBRIS FROM THE SITE BEFORE SEEDING AND MULCHING.
- GRADE AREA TO PERMIT THE USE OF EQUIPMENT FOR SEEDING AND MULCHING.
- LOOSEN COMPACTED SOILS TO A DEPTH OF 6" TO 8" WITH APPROPRIATE TILLAGE EQUIPMENT.
- THE SITE IS LOCATED IN THE NORTHERN ALABAMA GEOGRAPHIC AREA. MAKE PLANTINGS BASED UPON SPECIFIED PLANTING PERIOD.
- SPREAD SEED AT APPROPRIATE SPREAD RATES.
- IF NEEDED, INCORPORATE LIME IN THE SEEDBED PREPARATION, BASED UPON SOIL TEST.
- IF NEEDED, APPLY FERTILIZER DURING SEEDBED PREPARATION, BASED UPON SOIL TEST.
- SPREAD HAY OR MULCH UNIFORMLY OVER THE AREA BY HAND OR WITH A POWER BLOWER UNTIL LESS THAN 25% TO 35% OF THE GROUND IS VISIBLE (1.5 TO 2 TON/ACRE).
- TACK HAY OR MULCH INTO SOIL SURFACE TO PREVENT WIND DISPLACEMENT.
- IF NEEDED, APPLY 30 LBS/ACRE OF NITROGEN FERTILIZER AFTER GERMINATION, BASED UPON SOIL TEST.
- PROVIDE ADEQUATE WATER SUPPLY AS NEEDED FOR GERMINATION, DEVELOPMENT AND MAINTENANCE.

B. MAINTENANCE:
- INSPECT ALL SEED/MULCHED AREAS DAILY AND AFTER EACH STORM EVENT FOR EROSION AND DAMAGE.
- MAKE REPAIRS WITHIN 24 HOURS AND RESTORE TO ORIGINAL CONDITION. BARE AND ERODED AREAS SHOULD BE ADDRESSED BY RE-INSTALLING WITH THE INSTALLATION STEPS ABOVE.
- MULCH WILL BE WETTED DURING WINDY CONDITIONS TO PREVENT BEING DISPLACED.

C. INSPECTION:
- INSPECTION BY THE CONTRACTOR (DAILY); QCP/QCI (MONTHLY OR AFTER 0.5" 24-HOUR OR GREATER RAIN EVENT).
- MAKE REQUIRED REPAIRS IMMEDIATELY.

2.4 STABILIZE SLOPES

THE PROJECT AREA IS LOCATED WITHIN A RELATIVELY FLAT GENERAL LANDSCAPE POSITION. EXCLUDING THE CCR AREA, THERE ARE NO EXISTING STEEP SLOPES WITHIN THE PROJECT AREA. MINOR SLOPES MAY BE CREATED THROUGH CUT AND FILL OPERATIONS AND DURING THE CONSTRUCTION OF STORMWATER PONDS. TEMPORARY SLOPES WILL BE CREATED THROUGH TEMPORARY STOCKPILING OF EXCESS SOILS. STEEP SLOPES WILL BE CREATED WITHIN THE CLOSURE AREA ENCOMPASSING TERRACES AND DOWNSLOPE DRAINS.

1. LAND GRADING

A. METHODS:
- LAND GRADING ACTIVITIES WILL BE PHASED TO REDUCE THE AREA OF EXPOSED SOILS AT ANY GIVEN TIME.
- LAND GRADING WILL OCCUR AS SPECIFIED BY THE ENGINEERING PLANS.
- TOPSOIL WILL BE RESERVED FOR FUTURE USE DURING PERMANENT STABILIZATION. TOPSOIL WILL BE COVERED UNTIL USE OR STABILIZED WITH SEED AND MULCH.
- OTHER SOILS WHICH ARE RESERVED FOR FUTURE USE WILL BE COVERED UNTIL USED OR STABILIZED WITH SEED AND MULCH.
- FINISHED GRADE SOILS WILL BE COMPACTED AS REQUIRED BY TECHNICAL SPECIFICATIONS.
- SLOPE LENGTHS WILL BE MINIMIZED WHERE POSSIBLE. SLOPE BREAKS WILL BE USED TO REDUCE EROSION POTENTIAL.
- WHEN GRADING SLOPES, EQUIPMENT WILL CREATE TRACKS WHICH ARE PERPENDICULAR TO THE SLOPE TO REDUCE EROSION AND RILL FORMATION.
- DISTURBED AREAS REMAINING INACTIVE FOR LONGER THAN 13 DAYS WILL RECEIVE TEMPORARY STABILIZATION MULCH OR SEED/MULCH.

B. MAINTENANCE:
- INSPECT ALL GRADED AREAS DAILY AND AFTER EACH STORM EVENT FOR EROSION AND DAMAGE.
- MAKE REPAIRS WITHIN 24 HOURS AND RESTORE TO ORIGINAL CONDITION.

C. INSPECTION:
- INSPECTION BY THE CONTRACTOR (DAILY); QCP/QCI (MONTHLY OR AFTER 0.5" 24-HOUR OR GREATER RAIN EVENT).
- MAKE REQUIRED REPAIRS IMMEDIATELY.

2.5 ESTABLISH PERIMETER CONTROLS AND SEDIMENT BARRIERS

THE FOLLOWING PERIMETER CONTROLS WILL BE UTILIZED ON SITE TO FILTER AND TRAP SEDIMENT WITHIN STORMWATER:

SILT FENCE PERIMETER CONTROL WILL BE USED TO PROVIDE PROTECTION ALONG WITH COMPOST FILTER SOCKS.

2.6 RETAIN SEDIMENT ON-SITE

1. SEDIMENT BASIN

SEDIMENT WILL BE RETAINED ON-SITE THROUGH THE USE OF SEDIMENT BASINS WHERE THE DRAINAGE AREA IS TOO LARGE FOR OTHER SEDIMENT CONTROL PRACTICES. DETENTION PONDS MAY BE MODIFIED TO RETAIN SEDIMENT DURING THE CONSTRUCTION PHASE. UPON COMPLETION OF STABILIZATION OF DISTURBED AREAS, DETENTION PONDS WILL BE RESTORED TO PERMANENT GRADE, FUNCTION AND CONDITION ACCORDING TO TECHNICAL SPECIFICATIONS.

A. INSTALLATION:
- SEDIMENT BASINS WILL BE LOCATED WHERE FAILURE WOULD NOT RESULT IN LOSS OF LIFE OR SERIOUS PROPERTY DAMAGE. THE SEDIMENT BASIN WILL BE INSTALLED DURING THE INITIAL GRADING ACTIVITIES.
- SEDIMENT BASINS WILL BE DESIGNED TO REDUCE TURBIDITY LEVELS TO LESS THAN 50 NTUS ABOVE BACKGROUND, PRIOR TO DISCHARGE, AS REQUIRED BY THE ADEM REGULATIONS.
- SEDIMENT BASINS MAY BE CREATED BY FORMING A LOW DAM ACROSS A NATURAL SWALE WHERE PRACTICABLE.
- SEDIMENT BASINS MAY BE CREATED BY MODIFYING THE PERMANENT DETENTION BASIN FOR USE DURING CONSTRUCTION.
- EMERGENCY SPILLWAYS FOR THESE BASINS WILL BE STABILIZED WITH GEOTEXTILE FABRIC AND RIPRAP SIZED TO WITHSTAND EXPECTED FLOWS. EMERGENCY SPILLWAYS WILL HAVE THE CAPACITY TO CARRY THE PEAK FLOW OF A 10-YEAR 24-HOUR STORM EVENT WITH A MINIMUM OF ONE FOOT FREEBOARD.
- SCOUR PROTECTION WILL BE INSTALLED BELOW THE OUTLET AND EMERGENCY SPILLWAY TO REDUCE FLOW VELOCITY AND EROSION POTENTIAL.
- FLOCCULANTS WILL BE USED WHEN NEEDED TO PROVIDE SUPPORT TO REDUCE SEDIMENT SETTLING TIMES. FLOCCULANT MATERIALS SELECTION WILL BE DETERMINED BY SITE CONDITIONS AT THE TIME AND MATERIALS AVAILABILITY. FLOCCULANTS WILL BE APPLIED AS DESCRIBED IN MANUFACTURER'S SPECIFICATIONS, AND MAY INCLUDE "FLOC-LOGS"; DIRECT MIXING OF FLOCCULANT FLUIDS INTO THE STORMWATER WITHIN THE BASIN; OR OTHER APPROPRIATE METHODS. IF FLOCCULANTS ARE UTILIZED WITHIN THIS PROJECT, A COMPLETE DESCRIPTION OF MANUFACTURER INSTRUCTIONS AND METHODS WILL BE INCLUDED AND THE MATERIAL SAFETY DATA SHEETS WILL BE INCLUDED.
- POROUS BAFFLES MAY BE INSTALLED IN MODIFIED DETENTION BASINS OR AS INDICATED ON BMP MAPS TO REDUCE TURBULENCE AND TO SPREAD THE FLOW ACROSS ENTIRE WIDTH OF THE BASIN.
- BAFFLES MAY BE INSTALLED TO DIVIDE THE BASIN INTO EQUAL VOLUME SECTIONS. BAFFLE MATERIALS WILL BE LOOSELY WOVEN COIR NETTING OR OTHER EQUIVALENT MATERIALS.
- BAFFLES WILL BE SECURED TO THE BASIN FLOOR AND SIDE SLOPES. STAKES AND SUPPORT WIRE OR ROPES WILL BE USED TO REDUCE SAGGING.
- THE ELEVATION AT WHICH THE INVERT OF THE BASIN WOULD BE HALF FULL WILL BE MARKED WITH A PERMANENT STAKE WITHIN THE BASIN.
- A SKIMMER OR OTHER METHOD MAY BE IMPLEMENTED TO ENSURE THAT DISCHARGE WATER IS PULLED FROM THE UPPER WATER SURFACE, WHICH HAS A LOWER TURBIDITY LEVEL. THE DEWATERING TIME WILL BE TWO TO FIVE DAYS, OR AS SUCH TIME NEEDED TO ENSURE APPROPRIATE TURBIDITY REDUCTION PRIOR TO DISCHARGE. THE SKIMMER WILL BE 6 INCHES, WITH AN ORIFICE SIZE OF 5.5 INCHES. THE SKIMMER WILL BE SET ON A STONE FILTER RING IN ORDER TO KEEP THE SKIMMER FROM CONTACTING THE UNDERLYING SEDIMENTS.
- AS EXAMPLE, THE DRAINAGE AREA FOR THE SEDIMENT BASIN IS 5.5 ACRES. THE CAPACITY OF THE BASIN WILL BE APPROXIMATELY 85,176 CUBIC FEET.
- THE BASIN RISER MAY HAVE ONLY ONE HOLE CORED FOR THE SKIMMER DURING CONSTRUCTION, WITH THE REMAINING TO BE CORED ONCE CONSTRUCTION IS COMPLETE. HOWEVER, THE CONTRACTOR MAY ELECT TO CORE THE REMAINING HOLES AT THE TIME OF INSTALLATION AND PLUG THEM WITH RUBBER PLUGS DURING CONSTRUCTION.

B. MAINTENANCE:
- SEDIMENT WITHIN THE BASIN WILL BE REMOVED WHEN IT REACHES ONE-HALF OF THE DESIGN CAPACITY, AS EVIDENCED BY THE PERMANENT STAKE MARKING.
- SEDIMENT WILL BE REMOVED FROM THE CELL WHEN ACCUMULATED TO THE CREST OF THE WEIR IN THE FIRST BAFFLE.
- ENSURE BAFFLE MATERIAL IS SECURED TO THE BOTTOM AND SIDES OF THE BASIN TO PREVENT UNDERCUTTING AND BYPASSING.
- BASIN WILL BE DEWATERED WITH A SURFACE SKIMMER OR OTHER EQUIVALENT DEVICE AS NEEDED FOLLOWING RAINFALL EVENTS GREATER THAN THE DESIGN CAPACITY. EMERGENCY DEWATERING MAY BE ACCOMPLISHED WITH FILTER BAGS OR OTHER EQUIVALENT METHODS TO REDUCE TURBIDITY LEVELS TO LESS THAN 50 NTUS ABOVE BACKGROUND PRIOR TO DISCHARGE.
- DAMAGED OR SAGGING BAFFLES WILL BE REPAIRED OR REPLACED AS NEEDED.
- RIPRAP, GEOTEXTILE FABRIC AND OTHER EMERGENCY SPILLWAY AND OUTLET PROTECTION MATERIALS WILL BE REPAIRED OR REPLACED AS NEEDED.

C. INSPECTION:
- INSPECTION BY THE CONTRACTOR (DAILY); QCI (DAILY); QCP/QCI (MONTHLY OR AFTER 0.75" 24-HOUR OR GREATER RAIN EVENT).
- MAKE REQUIRED REPAIRS IMMEDIATELY.

2. OUTLET PROTECTION

OUTLET PROTECTION MAY BE INSTALLED TO REDUCE EROSION AT THE DISCHARGE POINT OF A CHANNEL OR OTHER STORMWATER CONVEYANCE OUTFALL. VELOCITY REDUCTION AND SCOUR PROTECTION WILL BE PROVIDED BY THE INSTALLATION OF A RIPRAP LINED APRON OR OTHER APPROPRIATE MATERIALS.

A. INSTALLATION:
- OUTLET PROTECTION WILL BE INSTALLED AT DISCHARGE POINTS FOR DETENTION PONDS, SEDIMENT BASINS OR OTHER STORMWATER CONVEYANCE OUTFALLS.
- OUTLET PROTECTION WILL BE CONSTRUCTED WITH GEOTEXTILE FABRIC AND RIPRAP SIZED TO WITHSTAND EXPECTED FLOWS.
- OUTLET PROTECTION WILL BE INSTALLED ACCORDING TO TECHNICAL SPECIFICATIONS FOR MAXIMUM VELOCITY REDUCTION AND EROSION PROTECTION.

B. MAINTENANCE:
- REFRESH RIPRAP MATERIAL WHEN DISPLACED OR SEDIMENT DEPOSITS REACH A DEPTH OF ONE-HALF INCH THE CAPACITY OF THE APRON. EXCESSIVE SEDIMENT IN THE APRON MAY INDICATE INADEQUATE SEDIMENT CONTROLS. INSPECT SITE FOR THE SOURCE AND ADDRESS AS APPROPRIATE TO REDUCE SEDIMENT LOSS.

C. INSPECTION:
- INSPECTION BY THE CONTRACTOR (DAILY); QCI (DAILY); QCP/QCI (MONTHLY OR AFTER 0.75" 24-HOUR OR GREATER RAIN EVENT).
- MAKE REQUIRED REPAIRS IMMEDIATELY.

3. ESTABLISH STABILIZED CONSTRUCTION EXITS

A. INSTALLATION:
- ACCESS TO THE SITE WILL BE RESTRICTED TO DESIGNATED STABILIZED CONSTRUCTION EXITS (SCE).
- STABILIZED CONSTRUCTION EXITS WILL BE INSTALLED DURING THE INITIAL CLEARING AND GRADING ACTIVITIES TO REDUCE VEHICLE TRACKING OF SOILS ON TO PUBLIC ROADWAYS. THE ROCK PAD WILL PROVIDE SUFFICIENT VIBRATION FOR VEHICLE TIRES TO ALLOW SOILS TO FALL ON TO THE SCE PAD RATHER THAN BE TRACKED ON TO PUBLIC ROADS.
- THE STABILIZED CONSTRUCTION EXITS WILL BE CONSTRUCTED IN A LOCATION THAT PROVIDES A CLEAR VIEW OF ON-COMING TRAFFIC FOR EXITING VEHICLES.
- STABILIZED CONSTRUCTION EXITS WILL BE LOCATED AND CONSTRU

3. DAILY OBSERVATIONS PERFORMED BY THE QCI

A. THE QCI SHALL VISUALLY OBSERVE THE CONSTRUCTION PROJECT WHERE ACTIVE DISTURBANCE, WORK OR CONSTRUCTION OCCURRED.

B. NOTE ANY RAINFALL MEASUREMENTS OCCURRING SINCE THE PREVIOUS OBSERVATION.

C. NOTE ANY APPARENT BEST MANAGEMENT PRACTICE (BMP) DEFICIENCIES IN THE AREA OF ACTIVE DISTURBANCE.

D. MAINTAIN A LOG OF ALL DAILY OBSERVATIONS AND RECORD IN SUCH LOG ANY RAINFALL MEASUREMENTS AND BMP DEFICIENCIES OBSERVED.

4. INSPECTION RECORD

A. THE INSPECTION SHALL BE RECORDED IN A WRITTEN FORMAT. THE INSPECTION RECORD SHALL INCLUDE:
- THE SITE NAME AND LOCATION, DISCHARGE POINT AND NUMBER (IF APPLICABLE, DATE, TIME AND EXACT PLACE OF SAMPLING PERFORMED);
- THE NAME(S) OF PERSON(S) WHO PERFORMED THE INSPECTION AND/OR OBTAINED ANY SAMPLES OR MEASUREMENTS TAKEN;
- THE DATES AND TIMES OF THE INSPECTION AND ANY SAMPLES OR MEASUREMENTS TAKEN;
- A DESCRIPTION OF ANY SAMPLING AND ANALYTICAL TECHNIQUES OR METHODS USED, INCLUDING SOURCE OF METHOD AND METHOD NUMBER;
- THE RESULTS OF ANY ANALYSES PERFORMED;
- WEATHER CONDITIONS AT THE TIME OF THE INSPECTION;
- DESCRIPTION OF ANY DISCHARGES OF SEDIMENT OR OTHER POLLUTANTS FROM THE SITE;
- LOCATIONS OF DISCHARGES OF SEDIMENT OR OTHER POLLUTANTS FROM THE SITE;
- LOCATIONS OF BMPS THAT NEED TO BE MAINTAINED;
- LOCATIONS OF BMPS THAT FAILED TO OPERATE AS DESIGNED;
- LOCATIONS OF WHERE BMPS, REQUIRED BY THE CBMPP, ARE NOT INSTALLED OR INSTALLED IN A MANNER INCONSISTENT WITH THE CBMPP; AND
- LOCATIONS WHERE ADDITIONAL BMPS ARE NEEDED THAT DID NOT EXIST AT THE TIME OF THE INSPECTION. THIS REQUIREMENT IS APPLICABLE ONLY TO SITE INSPECTIONS PERFORMED BY A QCP OR QUALIFIED PERSONS UNDER THE DIRECT SUPERVISION OF A QCP.

5. CBMPP EVALUATIONS

A. THE QCP SHALL PERFORM AN ON-SITE EVALUATION OF ALL EROSION AND SEDIMENT CONTROLS BEING IMPLEMENTED FOR ADEQUACY AND CONSISTENCY WITH SITE CONDITIONS.

B. THE CBMPP EVALUATION SHALL BE PERFORMED AS OFTEN AS NECESSARY UNTIL POORLY FUNCTIONING OR DAMAGED EROSION CONTROLS OR SEDIMENT CONTROLS ARE CORRECTED AND, AT A MINIMUM, ONCE EVERY SIX MONTHS.

C. IF, BASED ON THE CBMPP EVALUATION, THE QCP IDENTIFIES ANY NEEDED MODIFICATIONS OR ADDITIONS TO THE EROSION AND SEDIMENT CONTROLS, THE CBMPP SHALL BE UPDATED.

D. MAINTAIN APPROPRIATE DOCUMENTATION OF THE CBMPP EVALUATION.

5.2 CORRECTIVE ACTION

1. ANY POORLY FUNCTIONING BMPS, NON-COMPLIANT DISCHARGES OR ANY OTHER DEFICIENCIES OBSERVED DURING MONTHLY OR PRECIPITATION EVENT INSPECTIONS WILL BE CORRECTED AS SOON AS POSSIBLE, BUT NOT TO EXCEED FIVE (5) DAYS OF THE INSPECTION UNLESS PREVENTED BY UNSAFE WEATHER CONDITIONS.

2. REPAIRS, REPLACEMENT AND MAINTENANCE WILL BE IMPLEMENTED WITHIN FIVE DAYS OF THE INSPECTION, UNLESS PREVENTED BY UNSAFE CONDITIONS.

3. TEMPORARY CONTAINMENT MEASURES WILL BE EMPLOYED IN THE EVENT OF A BREACH OF A SEDIMENT BASIN OR POND. THESE MEASURES WILL BE IMPLEMENTED WITHIN 24 HOURS FOLLOWING THE INSPECTION.

4. PERMANENT CORRECTIVE MEASURES WILL BE IMPLEMENTED WITHIN FIVE DAYS FOLLOWING THE INSPECTION.

5. SHOULD THE PERMITTEE BE UNABLE TO IMPLEMENT THE MEASURES WITHIN THE TIME ALLOWED, THE PERMITTEE WILL CONTACT THE ADEM.

6. IN THE EVENT THAT POLLUTANTS ARE DEPOSITED OFF-SITE OR IN A WATERBODY OR STORMWATER CONVEYANCE STRUCTURE, THE PERMITTEE WILL TAKE ALL REASONABLE STEPS TO REMOVE, TO THE MAXIMUM EXTENT PRACTICAL, THE POLLUTANTS DEPOSITED OFFSITE OR IN ANY WATER BODY OR STORMWATER CONVEYANCE STRUCTURE. RECOVERED POLLUTANTS IN THE FORM OF SEDIMENT WILL BE RETURNED TO THE SITE AND RECOVERED POLLUTANTS IN THE FORM OF PETROLEUM, CONSTRUCTION DEBRIS OR HOUSEHOLD RUBBISH WILL BE DISPOSED OF PROPERLY.

7. REPAIR, REPLACEMENT AND MAINTENANCE OF BMPS TAKEN AS A RESULT OF THE INSPECTIONS AND MAINTENANCE PROCEDURES SHOULD BE NOTED AND DESCRIBED IN THE CORRECTIVE ACTION LOG. A CORRECTIVE ACTION LOG FORM SHOULD BE PROVIDED AND MAINTAINED BY THE PROJECT MANAGER OR SITE SUPERVISOR.

6.0 SUSPENSION OF MONITORING

SUSPENSION OF APPLICABLE MONITORING AND INSPECTION REQUIREMENTS FOR PHASED PROJECTS MAY BE GRANTED PROVIDED THE QCP CERTIFY THAT ALL DISTURBANCE HAS BEEN GRADED AND/OR FULLY VEGETATED OR OTHERWISE PERMANENTLY COVERED.

7.0 PRECIPITATION MEASUREMENT

1. THE QCI SHALL MEASURE AND RECORD ALL PRECIPITATION OCCURRING AT THE CONSTRUCTION SITE. PRECIPITATION MEASUREMENTS SHALL BE FROM DAILY READINGS OF AN ON-SITE RAIN GAUGE OR OTHER MEASUREMENT DEVICE.

2. QUALIFYING PRECIPITATION EVENT REFERS TO ANY PRECIPITATION OF 0.75 INCHES OR GREATER IN ANY 24-HOUR PERIOD.

8.0 RECORD KEEPING AND TRAINING

8.1 RECORD KEEPING

1. A COPY OF THE NPDES PERMIT, THIS CBMPP AND THE HANDBOOK SHALL BE MAINTAINED AT THE SITE DURING NORMAL OPERATING HOURS AND BE AVAILABLE FOR REVIEW. THE PERMITTEE SHALL RETAIN RECORDS OF ALL INSPECTION RECORDS AND MONITORING INFORMATION, INCLUDING ALL CALIBRATION AND MAINTENANCE RECORDS, COPIES OF ALL REPORTS REQUIRED BY THE PERMIT AND RECORDS OF ALL DATA USED TO COMPLETE SUCH REPORTS FOR A PERIOD OF AT LEAST THREE (3) YEARS FROM THE DATE OF THE INSPECTION, SAMPLE, MEASUREMENT OR REPORT. RECORDS WILL BE RETAINED FOR A MINIMUM PERIOD OF AT LEAST THREE YEARS AFTER THE PERMIT IS TERMINATED.

2. RECORDS SHOULD INCLUDE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR, CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE AND WHEN AN AREA IS EITHER TEMPORARILY OR PERMANENTLY STABILIZED. A GRADING AND STABILIZATION ACTIVITIES LOG SHALL BE KEPT AND PROVIDED BY THE PROJECT MANAGER OR SITE SUPERVISOR.

8.2 LOG OF CHANGES TO THE CBMPP

1. MODIFICATIONS AND UPDATES TO THE CBMPP ARE TO BE RECORDED AND INCLUDED WITH THE CBMPP. IF EXISTING SEDIMENT CONTROL MEASURES, EROSION CONTROL MEASURES OR OTHER SITE BMPS PROVE INEFFECTIVE IN PROTECTING WATER QUALITY OR NEED TO BE MODIFIED, OR IF ADDITIONAL BMPS ARE NECESSARY TO MEET THE REQUIREMENTS OF THE PERMIT, IMPLEMENTATION WILL BE COMPLETED BEFORE THE NEXT STORM EVENT WHENEVER PRACTICABLE.

2. IF IMPLEMENTATION BEFORE THE NEXT STORM EVENT IS IMPRACTICABLE, THEN NEW LAND DISTURBANCE ACTIVITIES MUST CEASE UNTIL BMP MODIFICATION OR INSTALLATION CAN BE IMPLEMENTED. ADDITION OF NEW BMPS, REPLACEMENT OF FAILED BMPS, SIGNIFICANT CHANGES IN THE ACTIVITIES OR THEIR TIMING ON THE PROJECT, CHANGES IN PERSONNEL, CHANGES IN INSPECTION AND MAINTENANCE PROCEDURES, UPDATES TO SITE MAPS, SITE WEATHER PATTERNS, NEW TMDLS FINALIZED OR APPROVED BY THE EPA, NEW 303(D) LISTINGS APPROVED BY EPA, MANUFACTURER SPECIFICATIONS FOR SPECIFIC CONTROL TECHNOLOGIES, ETC. SHOULD BE LOGGED IN THE CBMPP.

3. ALL NECESSARY MODIFICATIONS TO THE CBMPP WILL BE MADE WITHIN SEVEN DAYS FOLLOWING NOTIFICATION OF THE DISCOVERY INSPECTION UNLESS GRANTED AN EXTENSION OF TIME BY THE ADEM. A CBMPP AMENDMENT LOG SHALL BE KEPT AND PROVIDED BY THE PROJECT MANAGER OR SITE SUPERVISOR.

8.3 TRAINING

1. TRAINING YOUR STAFF AND SUBCONTRACTORS ABOUT STORMWATER MANAGEMENT ISSUES AND RESPONSIBILITIES IS AN EFFECTIVE BMP. TRAINING OF STAFF, THOSE WITH SPECIFIC STORMWATER RESPONSIBILITIES (E.G. INSTALLING, INSPECTING AND MAINTAINING BMPS), AND SUBCONTRACTORS SHOULD BE IMPLEMENTED AND DOCUMENTED. DOCUMENTATION SHOULD INCLUDE DATES, NUMBER OF ATTENDEES, SUBJECTS COVERED AND LENGTH OF TRAINING.

2. THE PROJECT MANAGER WILL BE RESPONSIBLE FOR PROVIDING TRAINING FOR THE CONTRACTORS' ENVIRONMENTAL PROTECTION PERSONNEL.

3. ALL EMPLOYEES AND SUBCONTRACTORS WILL BE GIVEN INFORMATION REGARDING ENHANCED BMPS DURING THE PREPARATORY MEETING PRIOR TO EACH PHASE OF THE SITE WORK. IT WILL BE DOCUMENTED THAT EACH PERSON AT THESE MEETINGS HAS BEEN INSTRUCTED IN AND UNDERSTANDS THE IMPORTANCE OF ENVIRONMENTAL CONTROLS. BMPS OUTLINED IN THIS PLAN WILL BE DISCUSSED AT EACH MONTHLY SAFETY MEETING. ALL PERSONS WHO MAY BE IMPACTING EROSION CONTROL AND OTHER BMP MANAGEMENT WILL BE TRAINED REGARDING EROSION CONTROL AND OTHER ENVIRONMENTAL PROTECTIONS PRIOR TO WORK.

4. A QUALIFIED CREDENTIALED INSPECTOR (QCI) SHALL BE READILY AVAILABLE TO BE PRESENT ON-SITE AS OFTEN AS IS NECESSARY. QCI IS CERTIFIED BY COMPLETING AN INITIAL TRAINING AND ANNUAL REFRESHERS THROUGH AND ADEM-APPROVED QUALIFIED CREDENTIALED INSPECTOR PROGRAM (QCIP) CONDUCTED BY A COOPERATING TRAINING ENTITY.

5. THE QCI SHALL BE TRAINED IN THE FOLLOWING AREAS:

A. THE EVALUATION OF CONSTRUCTION SITES TO ENSURE THAT QUALIFIED PROFESSIONAL (QCP) DESIGNED AND CERTIFIED EROSION CONTROLS AND SEDIMENT CONTROLS DETAILED IN A CONSTRUCTION BEST MANAGEMENT PRACTICES PLAN (CBMPP) ARE EFFECTIVELY IMPLEMENTED AND MAINTAINED;

B. THE EVALUATION OF CONVEYANCE STRUCTURES, RECEIVING WATERS AND ADJACENT IMPACTED OFFSITE AREAS TO ENSURE THE PROTECTION OF WATER QUALITY; AND

C. THE GENERAL OPERATION OF A TURBIDITY METER OR SIMILAR DEVICE INTENDED FOR THE MEASUREMENT OF TURBIDITY.

6. EACH INDIVIDUAL HOLDING A QCI CERTIFICATION NEED NOT BE ON-SITE CONTINUOUSLY AND THEY MAY CONDUCT SITE INSPECTIONS AT MULTIPLE SITES PERMITTED BY THEM OR THEIR EMPLOYER.

7. EACH INDIVIDUAL HOLDING QCI CERTIFICATION SHALL OBTAIN ANNUAL CERTIFICATION OF SATISFACTORY COMPLETION OF FORMAL REFRESHER EDUCATION OR TRAINING REGARDING GENERAL EROSION AND SEDIMENT CONTROLS AND THE GENERAL OPERATION OF A TURBIDITY METER OR SIMILAR DEVICE INTENDED FOR THE MEASUREMENT OF TURBIDITY. THE REFRESHER TRAINING REQUIREMENTS, INCLUDING BUT NOT LIMITED TO, APPROPRIATE CURRICULA, COURSE CONTENT, COURSE LENGTH AND ANY PARTICIPANT TESTING, SHALL BE SUBJECT TO ACCEPTANCE BY ADEM PRIOR TO USE.

9.0 FINAL STABILIZATION

FINAL STABILIZATION OF DISTURBED AREAS MUST BE INITIATED IMMEDIATELY WHENEVER ANY CLEARING, GRADING, EXCAVATING OR OTHER EARTH DISTURBING ACTIVITIES HAVE PERMANENTLY CEASED ON ANY PORTION OF THE SITE. SOD AND OTHER LANDSCAPING MATERIALS WILL BE USED IN HIGH VISIBILITY AREAS SUCH AS THE MAIN ENTRANCE. SEED AND MULCH WILL BE USED TO PERMANENTLY STABILIZE THE REMAINDER OF THE PROJECT AREAS THAT ARE NOT IN PART OF THE ASH POND CAP. GUIDELINES FOR POST-CONSTRUCTION BMP INSTALLATION, IMPLEMENTATION AND MAINTENANCE ARE PROVIDED WITHIN THIS SECTION.

9.1 PAVING

1. ASPHALT CONCRETE PAVEMENT WILL BE INSTALLED, REPAIRED OR REPLACED AS NEEDED IN PARKING AND DRIVE AREAS AS SOON AS CONSTRUCTION OF SITE STRUCTURES IS COMPLETE.

9.2 SODDING

1. SEE DESCRIPTION IN SECTION 2.3.4

9.3 TERMINATION OF PERMIT

1. UPON CERTIFICATION BY THE QCP THAT ALL LAND DISTURBING CONSTRUCTION RELATED ACTIVES WITHIN THE PERMITTED AREA HAVE CEASED; ALL DISTURBED AREAS HAVE REACHED FINAL, PERMANENT STABILIZATION; AND ALL TEMPORARY BMP DEVICES (SILT FENCES, STRAW WATTLES, TEMPORARY SEDIMENT BASINS, AND OTHERS) HAVE BEEN REMOVED, A NOTICE OF TERMINATION WILL BE SUBMITTED TO THE ADEM. THE NOI WILL REMAIN IN EFFECT FOR THE DURATION OF CONSTRUCTION OR UNTIL APPROVAL OF THE NOTICE OF TERMINATION BY THE ADEM. A COPY OF THE NOTICE OF TERMINATION SHALL BE MAINTAINED AND PROVIDED BY THE SITE MANAGER OR THE SITE SUPERVISOR.

2. THE REGISTRANT MAY CHOOSE TO KEEP THE NOI ACTIVE IN ORDER TO COVER ANY FUTURE LAND DISTURBANCE ACTIVITIES WITHIN THE GENERAL PERMIT PERIOD. DURING PERIODS WITH NO LAND DISTURBANCE ACTIVITIES, THE REGISTRANT MAY REQUEST THE ADEM SUSPEND THE INSPECTION REQUIREMENTS, PROVIDED ALL PREVIOUSLY DISTURBED AREAS ARE PERMANENTLY STABILIZED. IF LAND DISTURBANCE ACTIVITIES WILL OCCUR OUTSIDE THE BOUNDARY OF THE PROJECT IDENTIFIED ON THE ORIGINAL NOI, A NOI MODIFICATION MUST BE SUBMITTED TO THE ADEM AND THE CBMPP MUST BE MODIFIED TO INCLUDE ANY NEW AREAS OF DISTURBANCE.

10.0 TURBIDITY MONITORING

1. TURBIDITY MONITORING IS REQUIRED ON ALL PROPERTY CONSTRUCTION SITES THAT DISTURB 10 OR MORE ACRES OF ERODIBLE MATERIAL.

2. STORMWATER DISCHARGES SHALL NOT INCREASE THE BACKGROUND TURBIDITY OF THE RECEIVING WATER BY MORE THAN 50 NEPHELOMETRIC TURBIDITY UNITS (NTUS) OR CAUSE A SUBSTANTIAL VISIBLE CONTRAST. EXCEEDANCES SHALL BE REPORTED TO THE OWNER. CONDUCT TURBIDITY MONITORING BY SAMPLING CHANNELIZED CONSTRUCTION STORMWATER DISCHARGES AND MEASURING FOR TURBIDITY WITH A PORTABLE TURBIDIMETER.

3. TURBIDITY SAMPLING POINTS ARE NOT ANTICIPATED FOR THIS SITE. THE SITE WILL BE BATH TUBBED AND STORMWATER FLOWS SHALL BE PUMPED TO A TREATMENT FACILITY DURING THE CONSTRUCTION PHASE OR UNTIL THE ASH POND COVER SYSTEM HAS BEEN INSTALLED. IF THE CONSTRUCTION SEQUENCE IS ALTERED AND THE WEST AND SOUTH PONDS ARE UTILIZED DURING THE CONSTRUCTION PHASE OF THE ASH POND CLOSURE, TURBIDITY SAMPLING POINTS SHALL BE LOCATED AT THE WEST AND SOUTH POND OUTLET DISCHARGE POINTS, AS SHOWN ON THE EROSION AND SEDIMENT CONTROL DRAWINGS. BOTH OF THESE POINTS SHALL BE IDENTIFIED IN THE FIELD BY A WOODEN STAKE NOTING THE IDENTIFICATION NUMBER SHOWN ON THE EROSION AND SEDIMENT CONTROL DRAWINGS.

4. SAMPLING

A. EQUIPMENT CLEANING
- FOR ACCURATE READINGS, SAMPLE TUBES WILL BE KEPT COMPLETELY CLEAN BOTH INSIDE AND OUT. SAMPLE TUBES WILL BE HANDLED BY THE LID AND WILL NOT BE TOUCHED ON THE GLASS. SCRATCHED OR ETCHED SAMPLE TUBES WILL BE DISCARDED AND REPLACED. DO NOT REUSE SAMPLE STORAGE CONTAINERS OR SAMPLE TUBES WITHOUT PROPER CLEANING. SAMPLE COLLECTION CONTAINERS, SAMPLE STORAGE CONTAINERS AND SAMPLE TUBES WILL BE WASHED PRIOR TO EACH USE AS FOLLOWS:
  - WASH WITH A BRUSH AND PHOSPHATE-FREE DETERGENT.
  - RINSE THREE TIMES WITH COLD TAP WATER.
  - RINSE THREE TIMES WITH DISTILLED OR DE-IONIZED WATER.
- ADDITIONALLY, FOR SAMPLE TUBES, WIPE THE EXTERIOR WITH A SOFT, LINT-FREE CLOTH. IF THERE ARE MINOR IMPERFECTIONS IN THE GLASS, A LIGHT COATING OF SILICONE OIL SHOULD BE APPLIED TO THE EXTERIOR SURFACE AND WIPED WITH THE CLOTH TO CREATE A THIN EVEN FILM OVER THE ENTIRE SURFACE.
- CLEAN GLASS OR PLASTIC WITH MOUTH SAMPLE CONTAINER AND COLLECTION DEVICES.
- CLEAN ANY INTERMEDIATE COLLECTION EQUIPMENT BETWEEN EACH SAMPLE.
- CAREFUL TO NOT CROSS CONTAMINATE.

B. SAMPLE COLLECTION
- SAMPLES SHALL BE OBTAINED AND ANALYZED BY A QCI; QCP; OR A QUALIFIED PERSON UNDER THE DIRECT SUPERVISION OF A QCP.
- CONSTRUCTION STORMWATER SAMPLES WILL BE COLLECTED BY GRAB SAMPLES FROM FLOWING CHANNELIZED DISCHARGE. THE SAMPLE WILL BE COLLECTED FROM THE CENTER OF THE MAIN FLOW OF THE DISCHARGE OR STREAM OR, IF TOO DEEP OR UNSAFE, AS NEAR TO THAT LOCATION AS POSSIBLE. IF YOU MUST STAND IN THE WATER TO TAKE THE SAMPLE, COLLECT THE SAMPLE UPSTREAM OF YOU AND ANY AREA THAT YOU DISTURB.
- RINSE THE INSIDE OF THE SAMPLE COLLECTION CONTAINER IN THE WATER TO BE SAMPLED PRIOR TO EACH SAMPLE COLLECTION. TO COLLECT A SAMPLE, HOLD THE SAMPLE COLLECTION CONTAINER NEAR THE BASE AND TURN IT WITH THE OPENING DOWNWARD TOWARDS THE WATER SURFACE. BEING SURE NOT TO TOUCH THE BOTTOM OF THE CONVEYANCE, PLUNGE THE CONTAINER INTO THE WATER 8 TO 12 INCHES BENEATH THE SURFACE OF HALFWAY DOWN FOR SHALLOWER FLOWS, TURN THE CONTAINER OPENING AWAY FROM YOU AND IN AN UPSTREAM DIRECTION TO COLLECT THE SAMPLE. LEAVE AIR SPACE IN THE CONTAINER.
- SAMPLING LOCATIONS SHALL PROVIDE FOR SAFE ACCESS.
- SAMPLE LOCATIONS SHALL BE LOCATED IN AN AREA OF STREAM TURBULENCE AND REPRESENTATIVE OF STREAM CONDITIONS.
- STREAM SHOULD APPEAR FAIRLY HOMOGENEOUS ACROSS ITS WIDTH.
- COLLECT SAMPLE FROM MID-STREAM AND MID-DEPTH. FACE SAMPLING DEVICE INTO THE CURRENT. AVOID SURFACE DEBRIS OR SCUM.

C. SAMPLE ANALYSIS
- THE SAMPLE ANALYSIS WILL BE CONDUCTED IN THE FIELD IMMEDIATELY AFTER SAMPLE COLLECTION. PLACE TURBIDIMETER ON A LEVEL SURFACE; DO NOT HOLD IT IN YOUR HAND. FILL THE SAMPLE TUBE BY POURING FROM THE COLLECTION CONTAINER. SECURELY CAP THE SAMPLE TUBE AND FOLLOW THE TURBIDIMETER MANUFACTURER'S OPERATION INSTRUCTIONS TO DETERMINE THE TURBIDITY OF THE CONSTRUCTION STORMWATER SAMPLE.
- GENTLY INVERT OR SWIRL SAMPLE TO MIX, DO NOT SHAKE SAMPLE.
- WIPE SIDES AND BOTTOM OF THE TUBE TO REMOVE MOISTURE AND FINGERPRINTS.
- SAMPLE TUBES CAN BE REUSED IN THE FIELD IF THEY ARE RINSED WITH DISTILLED WATER IMMEDIATELY AFTER EACH ANALYSIS.
- SAMPLES COLLECTED FOR TURBIDITY SHALL BE ANALYZED USING A TURBIDIMETER THAT IS PROPERLY CALIBRATED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS. MAINTAIN A CALIBRATION LOG THAT IS AVAILABLE FOR REVIEW UPON REQUEST. IN THE EVENT THAT THE SAMPLE EXCEEDS THE UPPER RANGE OF THE TURBIDIMETER, THE SAMPLE MUST BE COLLECTED, PRESERVED AND ANALYZED IN ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 136 AND GUIDELINES PUBLISHED PURSUANT TO SECTION 304(H) OF THE FWPCA, 33 U.S.C. SECTION 1314(H).
- ALL EQUIPMENT AND INSTRUMENTATION SHALL BE INSTALLED, MAINTAINED AND CALIBRATED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS OR, IN THE ABSENCE OF MANUFACTURER'S INSTRUCTIONS, IN ACCORDANCE WITH ACCEPTED PRACTICES.

D. REPORTING
- ALL MONITORING DATA SHALL BE RECORDED AND RETAINED WITH THE INSPECTION REPORTS AND BE AVAILABLE FOR INSPECTION.
- RECORD ALL SAMPLING AND MONITORING ON STORMWATER TURBIDITY SAMPLING FORMS.
- SAMPLE REPORTS SHOULD CONTAIN AT A MINIMUM:
- DATE, EXACT PLACE AND TIME OF SAMPLING MEASUREMENTS
- NAME OF THE INDIVIDUAL WHO PERFORMED THE SAMPLING OR MEASUREMENTS
- DATE(S) ANALYSES WERE PERFORMED
- NAMES OF THE INDIVIDUAL WHO PERFORMED THE ANALYSES
- ANALYTICAL TECHNIQUES OR METHODS USED
- RESULTS OF SUCH ANALYSES
- DOCUMENTATION OF STORMWATER DISCHARGES THAT INCREASE THE BACKGROUND TURBIDITY OF THE RECEIVING WATER BY MORE THAN 50 NEPHELOMETRIC TURBIDITY UNITS (NTUS) OR CAUSE A SUBSTANTIAL VISIBLE CONTRAST

5. PRECONSTRUCTION TURBIDITY MONITORING EVENT

A. PRIOR TO GROUND DISTURBANCE, CONDUCT PRECONSTRUCTION TURBIDITY MONITORING. COLLECT AND ANALYZE TURBIDITY SAMPLES AT SAMPLING POINTS. ALL RESULTS FROM PRECONSTRUCTION TURBIDITY MONITORING WILL BE RECORDED ON A STORMWATER TURBIDITY SAMPLING REPORT.

B. USE RESULTS AS A COMPARISON TO MEASUREMENTS TAKEN DURING CONSTRUCTION.

6. CONSTRUCTION TURBIDITY MONITORING EVENTS

A. PERFORM IN CONJUNCTION WITH ANY COMPREHENSIVE INSPECTION WHEN DISCHARGES ARE OCCURRING; OR

B. PERFORM FOLLOWING A QUALIFYING PRECIPITATION EVENT (0.75 INCHES OR GREATER IN ANY 24-HOUR PERIOD) IF DISCHARGES OCCUR AS A RESULT OF THE EVENT.

7. NORMAL MONITORING

A. SAMPLES AND TURBIDITY MEASUREMENTS ARE NOT REQUIRED OUTSIDE OF NORMAL OPERATING HOURS OR DURING UNSAFE WEATHER CONDITIONS. NORMAL OPERATING HOURS ARE FROM 6:00 A.M. TO 6:00 P.M. MONDAY THROUGH FRIDAY, EXCLUDING FEDERAL HOLIDAYS. NORMAL OPERATING HOURS ALSO INCLUDE ANY TIME WHEN WORKERS ARE PRESENT OR WHEN CONSTRUCTION ACTIVITY IS OCCURRING, REGARDLESS OF THE PARTICULAR DAY OR TIME.

11.0 CERTIFICATION AND NOTIFICATION

I CERTIFY UNDER PENALTY OF LAW THAT A COMPREHENSIVE CONSTRUCTION BEST MANAGEMENT PRACTICES PLAN (CBMPP) FOR THE PREVENTION AND MINIMIZATION OF ALL SOURCES OF POLLUTION IN STORMWATER AND AUTHORIZED RELATED PROCESS WASTEWATER RUNOFF HAS BEEN PREPARED UNDER MY SUPERVISION FOR THIS SITE/ACTIVITY, AND ASSOCIATED REGULATED AREAS/ACTIVITIES. THE CBMPP MEETS THE REQUIREMENTS OF THIS PERMIT AND, IF PROPERLY IMPLEMENTED AND MAINTAINED BY THE OPERATOR, DISCHARGES OF POLLUTANTS IN STORMWATER RUNOFF CAN REASONABLY BE EXPECTED TO BE EFFECTIVELY MINIMIZED TO THE MAXIMUM EXTENT PRACTICABLE ACCORDING TO THE REQUIREMENTS OF ADEM ADMINISTRATIVE CODE CHAPTER 335-6-6-.23 AND THIS PERMIT. THE CBMPP DESCRIBES THE EROSION AND SEDIMENT CONTROL MEASURES THAT MUST BE FULLY IMPLEMENTED AND REGULARLY MAINTAINED AS NEEDED AT THE PERMITTED SITE IN ACCORDANCE WITH SOUND SEDIMENT AND EROSION CONTROL PRACTICES TO ENSURE THE PROTECTION OF WATER QUALITY.

NAME:_____ TITLE:_____

QCP DESIGNATION/DESCRIPTION:_____ REGISTRATION/CERTIFICATION:_____

ADDRESS:_____ PHONE NUMBER:_____

SIGNATURE:_____ DATE:_____

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AnC	Allen loam, 6 to 10 percent slopes	28.8	3.3%
AqC	Allen-Quitman-Urban land complex, 0 to 10 percent slopes	168.3	19.1%
Ch	Choccolocco loam, occasionally flooded	5.7	0.6%
DuB	Decatur silt loam, 2 to 6 percent slopes	35.1	4.0%
DuC	Decatur silt loam, 6 to 10 percent slopes	12.8	1.5%
MID	Minvale-Fullerton complex, 6 to 15 percent slopes	17.1	1.9%
MrE	Minvale-Fullerton, complex, 15 to 35 percent slopes	95.0	10.8%
TsE	Townley-Sunlight complex, 12 to 35 percent slopes	2.1	0.2%
TlE	Townley-Urban land complex, 4 to 25 percent slopes	23.9	2.7%
Tu	Tupelo loam, frequently flooded	24.7	2.8%
W	Water	322.4	36.7%
Subtotals for Soil Survey Area		**736.9**	**83.7%**
Totals for Area of Interest		**879.3**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AgB	Allen gravelly fine sandy loam, 2 to 6 percent slopes	15.1	1.7%
Be	Beason silt loam	2.4	0.3%
DlB	Dewey loam, 2 to 6 percent slopes	1.6	0.2%
DmC2	Dewey clay loam, 6 to 10 percent slopes, eroded	13.2	1.5%
FcC	Fullerton cherty silt loam, 6 to 10 percent slopes	13.6	1.5%
HoB	Holston fine sandy loam, 2 to 6 percent slopes	5.2	0.6%
Ld	Leadvale silt loam	4.1	0.5%
LoA	Locust silt loam, 0 to 2 percent slopes	5.5	0.6%
MoE	Minvale-Bodine association, hilly	16.8	1.9%
W	Water, > 40 acres	65.8	7.5%
Subtotals for Soil Survey Area		**143.3**	**16.3%**
Totals for Area of Interest		**879.3**	**100.0%**

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED No. 29507 PROFESSIONAL ENGINEER GILBERT M. HAINES
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

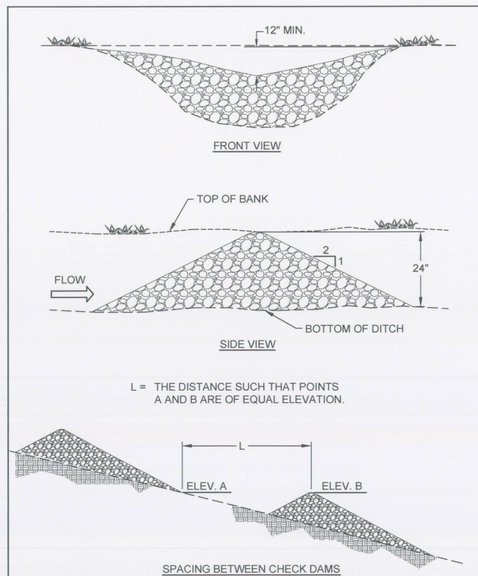
REVISIONS			
NO.	DATE	BY	APPROVED

DESIGNED BY:	J.ALDRIDGE
DRAWN BY:	J. ALDRIDGE
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

CBMPP NOTES - II

SHEET NUMBER:	REV. #
GAS_3.2.4_901	0



DESIGN CRITERIA
FORMAL DESIGN IS NOT REQUIRED. THE FOLLOWING LIMITING FACTORS SHOULD BE ADHERED TO WHEN DESIGNING CHECK DAMS.

DRAINAGE AREA
TEN ACRES OR LESS.

MAXIMUM HEIGHT
TWO FEET WHEN DRAINAGE AREA IS LESS THAN 5 ACRES.
THREE FEET WHEN DRAINAGE AREA IS 5 TO 10 ACRES.

DEPTH OF FLOW
SIX INCHES WHEN DRAINAGE AREA IS LESS THAN 5 ACRES.
TWELVE INCHES WHEN DRAINAGE AREA IS 5 TO 10 ACRES.
THE TOP OF DAM, PERPENDICULAR TO FLOW, SHOULD BE PARABOLIC. THE CENTER OF THE DAM SHOULD BE CONSTRUCTED LOWER THAN THE ENDS. THE ELEVATION OF THE CENTER OF THE DAM SHOULD BE LOWER THAN THE ENDS BY THE DEPTH OF FLOW LISTED ABOVE.

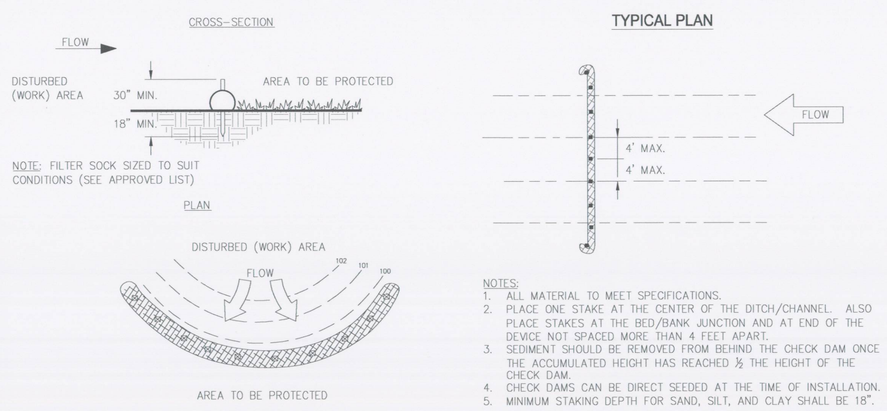
SIDE SLOPES
2:1 OR FLATTER.

SPACING
THE ELEVATION OF THE TOE OF THE UPSTREAM DAM SHOULD BE AT OR BELOW THE ELEVATION OF CREST OF THE DOWNSTREAM DAM (FIGURE CD-2).
FOR EXAMPLE, IF THE CHANNEL IS 3% GRADE, AND THE DRAINAGE AREA IS 3 ACRES:
THE CHECK DAM HEIGHT WOULD BE 2 FEET.
THE CHECK DAM SPACING SHOULD BE 67 FEET.
SPACING (FT) = DAM HEIGHT (FT) / CHANNEL GRADE
SPACING = 2 FT / 0.03 = 67 FEET

KEYWAY
MEASURES SHOULD BE TAKEN TO ENSURE THE FLOW DOES NOT CAUSE EROSION UNDERNEATH THE
CHECK DAM. THIS IS OFTEN ACCOMPLISHED USING GEOTEXTILE UNDERNEATH THE CHECK DAM
OR IN HIGHLY EROSIVE SOILS A KEYWAY LINED WITH GEOTEXTILE AND FILLED WITH ROCK.
KEYWAYS IF USED SHOULD BE KEYED INTO THE CHANNEL BOTTOM AND ABUTMENTS TO A DEPTH
OF 12 TO 24". THE KEYWAY WIDTH SHOULD BE AT LEAST 12".

ROCK CHECK DAMS
ROCK CHECK DAMS SHOULD BE CONSTRUCTED OF APPROPRIATELY SIZED DURABLE ROCK RIPRAP.
RIPRAP GRADATION SHOULD CONFORM TO THE REQUIREMENTS OF ALABAMA HIGHWAY DEPARTMENT, STANDARD SPECIFICATION FOR HIGHWAY CONSTRUCTION.
IN SOILS WHERE FAILURE BY PIPING OF SOILS INTO THE ROCK IS LIKELY, A NON-WOVEN GEOTEXTILE WILL BE USED AS A FILTER TO SEPARATE THE SOILS FROM THE ROCK. THE GEOTEXTILE
SHALL BE OF THE STRENGTH AND DURABILITY REQUIRED FOR THE PROJECT TO ENSURE THE ROCK AND SOIL BASE ARE STABLE. GENERALLY, THE NON-WOVEN GEOTEXTILE SHOULD MEET THE
REQUIREMENTS FOUND IN ASSHTO M288.

CD STONE CHECK DAM

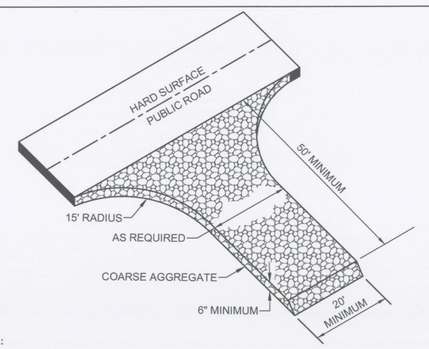


NOTES:
1. ALL MATERIAL TO MEET SPECIFICATIONS.
2. PLACE ONE STAKE AT THE CENTER OF THE DITCH/CHANNEL. ALSO PLACE STAKES AT THE BED/BANK JUNCTION AND AT END OF THE DEVICE NOT SPACED MORE THAN 4 FEET APART.
3. SEDIMENT SHOULD BE REMOVED FROM BEHIND THE CHECK DAM ONCE THE ACCUMULATED HEIGHT HAS REACHED ½ THE HEIGHT OF THE CHECK DAM.
4. CHECK DAMS CAN BE DIRECT SEEDED AT THE TIME OF INSTALLATION.
5. MINIMUM STAKING DEPTH FOR SAND, SILT, AND CLAY SHALL BE 18".

COMPOST FILTER SOCK (CD-FS)

COMPOST SOCKS FOR CHECK DAMS (CD-FS)

CD COMPOSITE FILTER SOCK/WATTLES



DESIGN CRITERIA:
AGGREGATE SIZE:
AGGREGATE SHOULD BE ALABAMA HIGHWAY DEPARTMENT COARSE AGGREGATE GRADATION NO.1.

PAD THICKNESS:
THE EXIT PAD SHALL HAVE A MINIMUM AGGREGATE THICKNESS OF 6"±.

GEOTEXTILES:
A NON-WOVEN GEOTEXTILE SHALL BE PLACED UNDERNEATH THE AGGREGATE. THE GEOTEXTILE SHALL BE OF THE STRENGTH AND DURABILITY REQUIRED FOR THE PROJECT TO ENSURE THE AGGREGATE AND SOIL BASE ARE STABLE. GENERALLY, THE NON-WOVEN GEOTEXTILE SHOULD MEET THE REQUIREMENTS FOUND IN ASSHTO M288.

PAD LENGTH:
THE EXIT PAD SHOULD PROVIDE FOR ENTERING AND PARKING THE LONGEST ANTICIPATED CONSTRUCTION VEHICLES. A PAD IS TYPICALLY 50 FEET LONG BUT THE REQUIRED LENGTH MAY BE LONGER OR SHORTER.

CEP CONSTRUCTION EXIT PAD

DESIGN CRITERIA
PERMANENT METHODS

VEGETATIVE COVER
FOR DISTURBED AREAS NOT SUBJECT TO TRAFFIC, VEGETATION PROVIDES THE MOST PRACTICAL METHOD OF DUST CONTROL. ESTABLISH VEGETATIVE COVER ACCORDING TO THE PERMANENT SEEDING OR TEMPORARY SEEDING PRACTICE.

TOPSOILING
THIS ENTAILS COVERING THE SURFACE WITH LESS EROSIVE SOIL MATERIAL. SEE TOPSOILING PRACTICE FOR GUIDANCE.

STONE
STONE USED TO STABILIZE CONSTRUCTION ROADS CAN ALSO BE EFFECTIVE FOR DUST CONTROL. STONE SHOULD BE SPREAD A MINIMUM OF 6" THICK OVER CONSTRUCTION ROADS IN THE DISTURBED AREA. FOR HEAVILY TRAVELED ROADS OR ROADS SUBJECTED TO HEAVY LOADS THE STONE THICKNESS SHOULD BE 8" TO 10". A NON-WOVEN GEOTEXTILE MEETING THE MINIMUM REQUIREMENTS OF ASSHTO M288 SHOULD BE USED UNDER THE STONE.

TEMPORARY METHODS
MULCHES
MULCH OFFERS A FAST, EFFECTIVE MEANS OF CONTROLLING DUST WHEN PROPERLY APPLIED. SEE MULCHING PRACTICE FOR GUIDELINES FOR PLANNING AND INSTALLING THE PRACTICE.

TEMPORARY VEGETATIVE COVER
FOR DISTURBED AREAS WHERE NO ACTIVITY IS ANTICIPATED FOR 14 DAYS OR LONGER, TEMPORARY SEEDING CAN EFFECTIVELY CONTROL DUST. ESTABLISH VEGETATIVE COVER ACCORDING TO TEMPORARY SEEDING PRACTICE GUIDELINES.

CALCIUM CHLORIDE
CALCIUM CHLORIDE MAY BE APPLIED BY MECHANICAL SPREADER AS LOOSE, DRY GRANULES OR FLAKES AT A RATE THAT KEEPS THE SURFACE MOIST BUT NOT SO HIGH AS TO CAUSE WATER POLLUTION OR PLANT DAMAGE.

SPRAY-ON ADHESIVES
SPRAY-ON ADHESIVES MAY BE USED ON MINERAL SOILS FOR DUST CONTROL. TRAFFIC MUST BE KEPT OFF TREATED AREAS TO PREVENT THE PRODUCT FROM BECOMING INEFFECTIVE. EXAMPLES OF SPRAY-ON ADHESIVES FOR USE IN DUST CONTROL ARE LISTED IN TABLE DC-1.

TABLE DC-1 SPRAY-ON ADHESIVES FOR DUST CONTROL ON MINERAL SOIL

MATERIAL	WATER DILUTION	TYPE OF NOZZLE	APPLY GAL/AC
ANIONIC ASPHALT EMULSION	7:1	COARSE SPRAY	1,200
LATEX EMULSION	12.5:1	FINE SPRAY	235
RESIN IN WATER	4:1	FINE SPRAY	300

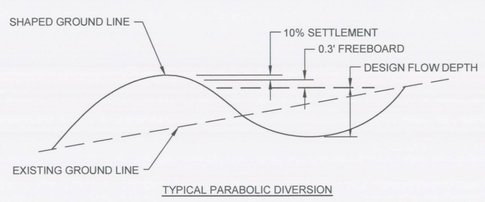
CHEMICAL STABILIZATION (CHS)
CHEMICAL PRODUCTS ARE AVAILABLE FOR USE ON MINERAL SOILS FOR DUST CONTROL. TRAFFIC MUST BE OFTEN KEPT OFF TREATED AREAS TO PREVENT THE PRODUCT FROM BECOMING INEFFECTIVE. THE MANUFACTURER OR SUPPLIER SHALL PROVIDE WRITTEN APPLICATION METHODS. THE APPLICATION METHOD SHALL ENSURE UNIFORM COVERAGE TO THE TARGET AND AVOID DRIFT TO NON-TARGET AREAS INCLUDING WATERS OF THE STATE. THE MANUFACTURER OR SUPPLIER SHALL ALSO PROVIDE WRITTEN INSTRUCTIONS TO ENSURE PROPER SAFETY, STORAGE, AND MIXING OF THE PRODUCT. REFER TO THE PLANNING CONSIDERATIONS FOR THE CHEMICAL STABILIZATION PRACTICE FOR PLANNING CONSIDERATION BEFORE DECIDING TO USE THESE TYPE PRODUCTS.

SPRINKLING OR IRRIGATION
SPRINKLING IS ESPECIALLY EFFECTIVE FOR DUST CONTROL ON HAUL ROADS AND OTHER TRAFFIC ROUTES. SPRINKLE THE SITE UNTIL THE SURFACE IS WET. REPEAT AS NEEDED. ALSO BARE AREAS MAY BE KEPT WET WITH IRRIGATION TO CONTROL DUST AS AN EMERGENCY TREATMENT.

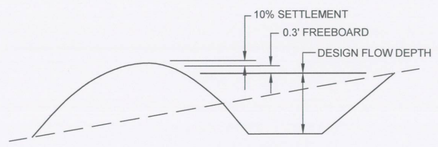
TILLAGE
TILLAGE IS USED TO ROUGHEN THE SITE AND BRING CLODS AND MOIST SOIL TO THE SURFACE. THIS IS A TEMPORARY EMERGENCY MEASURE THAT CAN BE USED ON LARGE OPEN DISTURBED AREAS AS SOON AS SOIL BLOWING STARTS. BEGIN TILLING ON THE WINDWARD EDGE OF THE SITE. THE DEPTH OF TILLAGE IS DETERMINED BY THE DEPTH TO MOIST SOIL AND THE AMOUNT OF MOIST SOIL DESIRED AT THE SURFACE. IN SANDY SOILS, THE DEPTH TO MOIST SOIL MAY MAKE TILLAGE IMPRACTICAL.

BARRIERS
A BOARD FENCE, WIND FENCE, SEDIMENT FENCE, HAY BALES, OR SIMILAR BARRIERS CAN CONTROL AIR CURRENTS AND BLOWING SOIL. PLACE BARRIERS PERPENDICULAR TO PREVAILING AIR CURRENTS AT INTERVALS ABOUT 15 TIMES THE BARRIER HEIGHT.

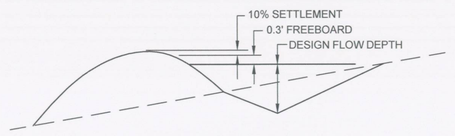
DU DUST CONTROL



TYPICAL PARABOLIC DIVERSION



TYPICAL TRAPEZOIDAL DIVERSION



TYPICAL VEE-SHAPED DIVERSION

DESIGN CRITERIA

LOCATION
DIVERSION LOCATION SHOULD BE DETERMINED BY CONSIDERING OUTLET CONDITIONS, TOPOGRAPHY, LAND USE, SOIL TYPE, LENGTH OF SLOPE, SEEPAGE (WHERE SEEPAGE IS A
PROBLEM) AND THE DEVELOPMENT LAYOUT. OUTLETS MUST BE STABLE AFTER THE DIVERSION EMPTIES STORMWATER FLOW INTO IT; THEREFORE, CARE SHOULD BE EXERCISED IN SELECTING THE
LOCATION OF THE DIVERSION AND ITS OUTLET.

CAPACITY
THE DIVERSION CHANNEL MUST HAVE A MINIMUM CAPACITY TO CARRY THE RUNOFF EXPECTED FROM A STORM FREQUENCY MEETING THE REQUIREMENTS OF TABLE DV-L WITH A FREEBOARD OF AT LEAST 0.3 FOOT (FIGURE DV-1)
THE STORM FREQUENCY SHOULD BE USED TO DETERMINE THE REQUIRED CHANNEL CAPACITY, Q (PEAK RATE OF RUNOFF). THE PEAK RATE OF RUNOFF SHOULD BE DETERMINED USING THE NATURAL RESOURCES CONSERVATION SERVICE RUNOFF CURVE NO. (RCN) METHOD OR OTHER EQUIVALENT METHODS.

TABLE DV-1 DESIGN FREQUENCY

DIVERSION TYPE	TYPICAL AREA OF PROTECTION	24-HOUR DESIGN STORM FREQUENCY
TEMPORARY	CONSTRUCTION AREAS	2-YEAR
	BUILDING SITES	5-YEAR
PERMANENT	AGRICULTURAL LAND	10-YEAR
	MINED RECLAMATION AREA	10-YEAR
	RECREATION AREAS	10-YEAR
	ISOLATED BUILDINGS	25-YEAR
	URBAN AREAS, RESIDENTIAL, SCHOOL, INDUSTRIAL AREAS, ETC.	50-YEAR

DIVERSIONS DESIGNED TO PROTECT HOMES, SCHOOLS, INDUSTRIAL BUILDINGS, ROADS, PARKING LOTS, AND COMPARABLE HIGH-RISK AREAS, AND THOSE DESIGNED TO FUNCTION IN CONNECTION
WITH OTHER STRUCTURES, SHOULD HAVE SUFFICIENT CAPACITY TO CARRY PEAK RUNOFF EXPECTED FROM A STORM FREQUENCY CONSISTENT WITH THE HAZARD INVOLVED.

VELOCITIES
DIVERSIONS SHOULD BE DESIGNED SO THAT THE DESIGN VELOCITIES WILL BE SAFE FOR THE PLANNED TYPE OF PROTECTIVE VEGETATION AND THE EXPECTED MAINTENANCE, MAXIMUM
PERMISSIBLE VELOCITIES ARE DEPENDENT UPON THE EROSION RESISTANCE OF THE SOIL (TABLE DV-2) AND THE QUALITY OF THE VEGETATION MAINTAINED.

TABLE DV-2 PERMISSIBLE VELOCITIES

SOIL TEXTURE	VELOCITY IN FEET/SECOND CONDITIONS OF VEGETATION POOR	FAIR	GOOD
SAND, SILT, SANDY LOAM, SILT LOAM	1.5	2.0	3.0
SILTY CLAY LOAM, SANDY CLAY LOAM	2.5	3.0	4.0
CLAY	3.0	4.0	5.0

CHANNEL DESIGN
THE DIVERSION CHANNEL MAY BE PARABOLIC, TRAPEZOIDAL OR V-SHAPED AS SHOWN IN FIGURE DV-1 AND SHOULD BE DESIGNED IN ACCORDANCE WITH THE PROCEDURE PROVIDED IN THE DIVERSION DESIGN SECTION. LAND SLOPE MUST BE CONSIDERED WHEN CHOOSING CHANNEL DIMENSIONS. ON STEEPER SLOPES, NARROW AND DEEP CHANNELS MAY BE REQUIRED. ON MORE GENTLE SLOPES, BROAD, SHALLOW CHANNELS CAN BE USED TO FACILITATE MAINTENANCE.

RIDGE DESIGN
THE SUPPORTING RIDGE CROSS SECTION SHOULD MEET THE CONFIGURATION AND REQUIREMENTS OF FIGURE DV-1.
THE SIDE SLOPES SHOULD BE NO STEEPER THAN 2:1. SIDE SLOPES SHOULD BE FLATTER, 5:1 TO 10:1, WHEN THE DIVERSION IS TO BE PERMANENT WITH MOWING AND OTHER MAINTENANCE ACTIVITIES PERFORMED ON OR AROUND IT.
THE WIDTH OF THE RIDGE AT THE DESIGN WATER ELEVATION SHOULD BE A MINIMUM OF 4 FEET.
THE MINIMUM FREEBOARD SHOULD BE 0.3 FOOT.
THE DESIGN SHOULD INCLUDE A 10% SETTLEMENT FACTOR.

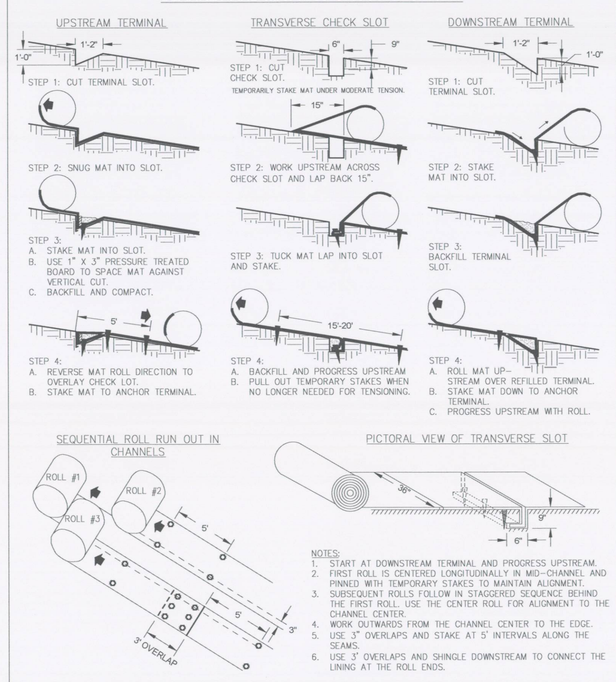
OUTLET
DIVERSIONS SHOULD HAVE ADEQUATE OUTLETS WHICH WILL CONVEY CONCENTRATED RUNOFF WITHOUT EROSION. ACCEPTABLE OUTLETS INCLUDE PRACTICES SUCH AS GRASSED SWALE, LINED SWALE, DROP STRUCTURE, SEDIMENT BASIN, AND STORMWATER DETENTION BASINS.

STABILIZATION
UNLESS OTHERWISE STABILIZED, THE RIDGE AND CHANNEL SHOULD BE SEEDED WITHIN 13 DAYS OF INSTALLATION IN ACCORDANCE WITH THE APPLICABLE SEEDING PRACTICE, PERMANENT SEEDING OR TEMPORARY SEEDING.
DISTURBED AREAS DRAINING INTO THE DIVERSION SHOULD BE SEEDED AND MULCHED PRIOR TO OR AT THE TIME THE DIVERSION IS CONSTRUCTED IN ACCORDANCE WITH THE PERMANENT SEEDING OR TEMPORARY SEEDING (WHICHEVER IS APPLICABLE) PRACTICES.

DV DIVERSION

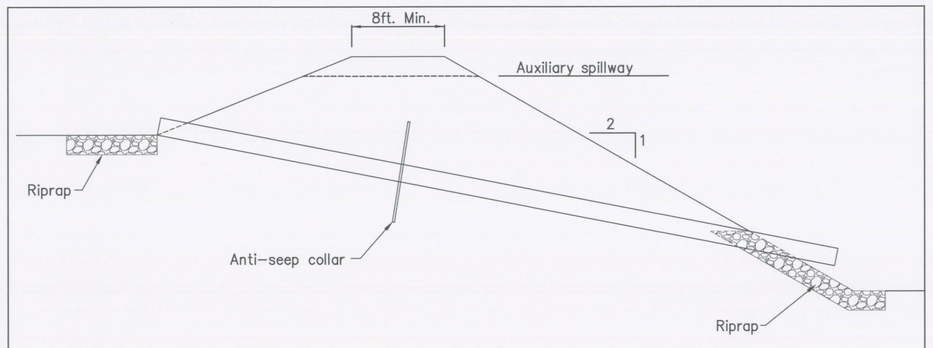
TYPICAL INSTALLATION GUIDELINES FOR ROLLED EROSION CONTROL PRODUCTS (RECP)

BLANKET AND MATTING CROSS-SECTIONS



NOTES:
1. START AT DOWNSTREAM TERMINAL AND PROGRESS UPSTREAM.
2. FIRST ROLL IS CENTERED LONGITUDINALLY IN MID-CHANNEL AND PINNED WITH TEMPORARY STAKES TO MAINTAIN ALIGNMENT.
3. SUBSEQUENT ROLLS FOLLOW IN STAGGERED SEQUENCE BEHIND THE FIRST ROLL. USE THE CENTER ROLL FOR ALIGNMENT TO THE CHANNEL CENTER.
4. WORK OUTWARDS FROM THE CHANNEL CENTER TO THE EDGE.
5. USE 3" OVERLAPS AND STAKE AT 5' INTERVALS ALONG THE SEAMS.
6. USE 3" OVERLAPS AND SHINGLE DOWNSTREAM TO CONNECT THE LINING AT THE ROLL ENDS.

ECB EROSION CONTROL BLANKET



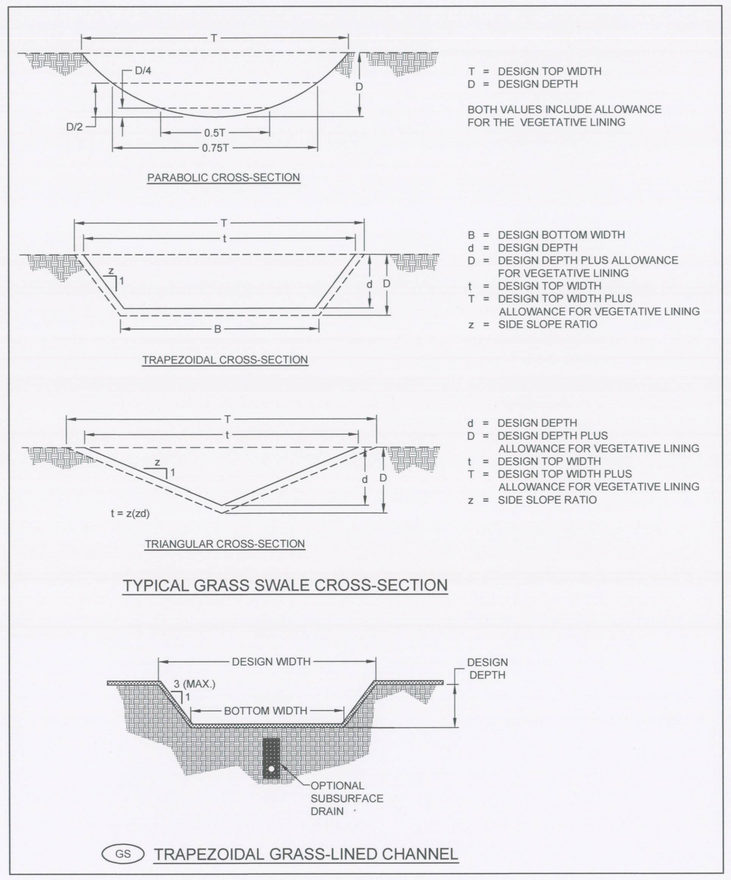
DESIGN CRITERIA
DESIGN AND SPECIFICATIONS SHALL BE PREPARED FOR EACH STRUCTURE ON AN INDIVIDUAL JOB BASIS DEPENDING ON ITS PURPOSE AND SITE CONDITIONS.

CAPACITY
THE MINIMUM DESIGN CAPACITY FOR PIPE STRUCTURES SHALL BE AS REQUIRED TO PASS THE PEAK RUNOFF EXPECTED FROM A 2 YEAR FREQUENCY, 24 HOUR DURATION STORM. PEAK RATES OF RUNOFF VALUES USED TO DETERMINE THE CAPACITY REQUIREMENTS SHOULD BE CALCULATED USING ACCEPTED ENGINEERING METHODS. SOME ACCEPTED METHODS ARE:
- NATURAL RESOURCES CONSERVATION SERVICE, NATIONAL ENGINEERING HANDBOOK SERIES, PART 650, ENGINEERING FIELD HANDBOOK, CHAPTER 2, ESTIMATING RUNOFF.
- NATURAL RESOURCES CONSERVATION SERVICE FORMERLY SOIL CONSERVATION SERVICE, TECHNICAL RELEASE 55, URBAN HYDROLOGY FOR SMALL WATERSHEDS.
- OTHER COMPARABLE METHODS.

RUNOFF COMPUTATION WILL BE BASED UPON THE MOST SEVERE SOIL AND COVER CONDITIONS THAT WILL EXIST IN THE AREA DRAINING INTO THE PIPE STRUCTURES DURING THE PLANNED LIFE OF THE STRUCTURE.
ALL PIPE STRUCTURES SHOULD BE DESIGNED AS ISLAND TYPE STRUCTURES WITH AN EMERGENCY SPILLWAY TO SAFELY PASS STORMS LARGER THAN THE STRUCTURE DESIGN STORM. THE MINIMUM TOTAL CAPACITY OF THE PRINCIPAL AND EMERGENCY SPILLWAYS SHALL BE THAT REQUIRED TO HANDLE THE 25-YEAR 24-HOUR DURATION STORM, OR THE PEAK RATE OF FLOW FROM THE CONTRIBUTING STRUCTURE, WHICHEVER IS GREATER. THE EMERGENCY SPILLWAY SHOULD BE LOCATED AT THE END OF THE EMBANKMENT ON NATURAL GROUND. IT SHOULD NOT BE PLACED OVER THE EARTHFILL EMBANKMENT.

GENERAL
THE PLANNING AND DESIGN OF ANTIVORTEX DEVICES, TRASH RACKS AND ANTI-SEEP COLLARS SHOULD BE IN ACCORDANCE WITH THE REQUIREMENTS FOR PRINCIPAL SPILLWAY PIPE DESIGN IN THE SEDIMENT BASIN PRACTICE. IN LIEU OF ANTI-SEEP COLLARS, A SAND DRAINAGE DIAPHRAGM WITH A FILTER COMPATIBLE OUTLET CAN BE USED. OUTLET PROTECTION FOR PIPES SHOULD BE DESIGNED ACCORDING TO THE OUTLET PROTECTION PRACTICE.
STRAIGHT PIPE STRUCTURES SHOULD BE BUILT IN ACCORDANCE WITH FIGURE DS-L.
PIPE DROP STRUCTURES SHOULD BE BUILT IN ACCORDANCE WITH FIGURE DS-2.
THE CREST ELEVATION FOR THE EMERGENCY SPILLWAY SHALL BE SET AT THE MINIMUM LEVEL NECESSARY TO ENSURE FULL PIPE FLOW OF THE PRINCIPAL SPILLWAY. THE TOP OF THE SETTLED EMBANKMENT SHALL BE BASED ON 1 FOOT OF FREEBOARD ABOVE THE DESIGN FLOW DEPTH IN THE EMERGENCY SPILLWAY.

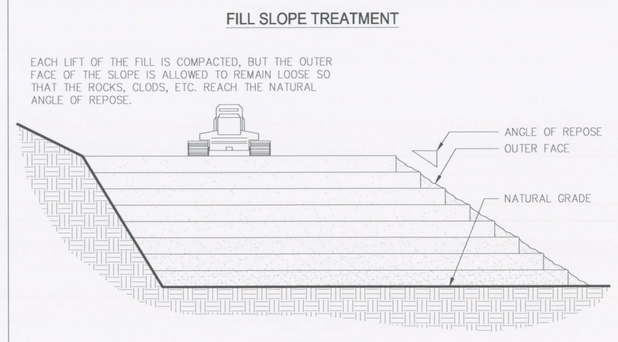
DS-1 STRAIGHT PIPE STRUCTURE



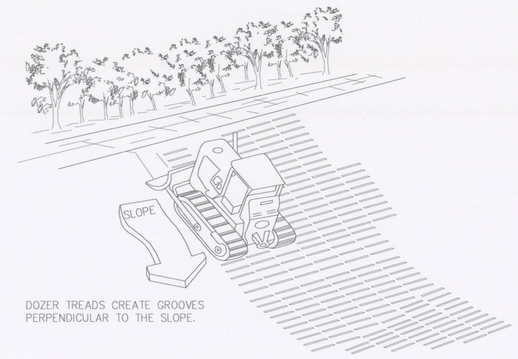
TYPICAL GRASS SWALE CROSS-SECTION

GS TRAPEZOIDAL GRASS-LINED CHANNEL

FILL SLOPE TREATMENT



TRACKING



DESIGN CRITERIA
SITE PREPARATION
A DETAILED SURVEY OF THE CONSTRUCTION SITE SHOULD BE PERFORMED BY A QUALIFIED SURVEYOR PRIOR TO GRADING PLAN DEVELOPMENT. THIS SURVEY SHOULD INCLUDE EXISTING TOPOGRAPHIC INFORMATION AT THE SITE INCLUDING EXISTING ELEVATIONS, EXISTING DRAINAGE PATTERNS, LOCATIONS OF EXISTING OVERHEAD AND UNDERGROUND UTILITIES, AND CONSTRUCTION LIMIT BOUNDARIES.
THE GRADING PLAN SHOULD REQUIRE THAT THE EXISTING TOPSOIL AT SITES TO BE GRADED BE REMOVED AS THE FIRST STEP IN THE GRADING PROCESS. THE PLAN SHOULD INCLUDE A LOCATION ON THE CONSTRUCTION SITE WHERE TOPSOIL WILL BE STOCKPILED. STOCKPILED TOPSOIL SHOULD BE PROTECTED BY TEMPORARY VEGETATION (SEE TEMPORARY VEGETATION PRACTICE) OR OTHER APPROPRIATE TEMPORARY COVER, SUCH AS PLASTIC, UNTIL IT IS USED TO COVER DISTURBED AREAS IN ADVANCE OF PERMANENT VEGETATION OF THE SITE.
THE GRADING PLAN SHOULD INCLUDE A SCHEDULE OF DISTURBANCE ACTIVITIES THAT MINIMIZES THE AREA DISTURBED AT ANY POINT IN TIME USING SEQUENCING AND STAGING CONCEPTS. IN AREAS WHERE CLEARING OF EXISTING VEGETATION IS PLANNED, THE AREA SHOULD BE CLEARED AND GRUBBED BY REMOVING TREES, VEGETATION, ROOTS AND OTHER DEBRIS SUCH AS TRASH. IN AREAS TO BE FILLED ALL LOOSE OR WEAK SOIL AND OVERSIZED ROCKS SHOULD BE REMOVED FROM THE AREA. THE FOUNDATION OF THE AREA TO BE FILLED SHOULD CONSIST OF SOIL OR ROCK MATERIAL IF ADEQUATE STRENGTH TO SUPPORT THE PROPOSED FILL MATERIAL AND THE STRUCTURES TO BE BUILT AT THE SITE. THE EXACT DEPTH OF MATERIAL TO BE REMOVED SHOULD BE DETERMINED BY A QUALIFIED GEOTECHNICAL PROFESSIONAL ACCORDING TO ACCEPTED ENGINEERING STANDARDS.

GRADING
A PLAN FOR PLACEMENT OF FILL SHOULD BE DEVELOPED BY A QUALIFIED GEOTECHNICAL PROFESSIONAL. THE PLAN SHOULD SPECIFY THE SOURCE OF FILL MATERIALS, WHICH SHOULD BE OBTAINED ON SITE IF POSSIBLE. MATERIALS USED FOR FILL, WHEN PLACED ACCORDING TO THE PLANS AND SPECIFICATIONS, SHOULD PROVIDE SUFFICIENT STRENGTH TO SUPPORT STRUCTURES PLANNED FOR CONSTRUCTION AT THE LOCATION.
LOOSE FILL MATERIAL SHOULD BE PLACED IN LAYERS NOT EXCEEDING 9" IN THICKNESS. THE MATERIALS SHOULD BE COMPACTED TO A MOISTURE CONTENT AND TO A DRY DENSITY THAT WILL PRODUCE THE DESIGN BEARING STRENGTH REQUIRED FOR STRUCTURES PLANNED AT THE SITE. A QUALIFIED GEOTECHNICAL ENGINEER SHOULD PROVIDE FILL PLACEMENT SPECIFICATIONS USING STANDARD ACCEPTED ENGINEERING PRACTICES.
LONG AND/OR STEEP SLOPE LENGTHS CAN RESULT IN RILL AND GULLY EROSION ON SLOPES. EROSION ON THESE TYPE SLOPES CAN BE MINIMIZED BY BREAKING THE SLOPE WITH DIVERSIONS OR BENCHES (SEE DIVERSION PRACTICE). DIVERSION WIDTHS SHOULD BE COMPATIBLE WITH THE EXPECTED MAINTENANCE EQUIPMENT. CARE IS NEEDED IN LOCATING OUTLETS THAT WILL BE STABLE AND NOT CAUSE GULLY EROSION. THE FOLLOWING TABLE GIVES GENERAL GUIDANCE ON THE HORIZONTAL SPACING OF SLOPE BREAKS:
TABLE LG-1 GUIDELINES FOR SPACING SLOPE BREAKS *

SLOPE (H:V)	HORIZONTAL SPACING (FT)
1:1	20
2:1	40
3:1	60
4:1 AND 5:1	80
6:1 TO 9:1	120
10:1 OR FLATTER	200

*ADJUSTMENTS IN SPACING MAY BE MADE TO ACCOUNT FOR SOIL AND SITE CONDITIONS AND PROFESSIONAL EXPERIENCE OF THE SITE DESIGNER.

IN AREAS WHERE SEEPAGE AND GROUND WATER ARE PRESENT SUBSURFACE DRAINS SHOULD BE INSTALLED TO IMPROVE SLOPE STABILITY OR SOIL BEARING CAPACITY (SEE SUBSURFACE DRAIN PRACTICE).
STEEP SLOPES SHOULD BE AVOIDED IF POSSIBLE. SLOPES THAT ARE TO BE VEGETATED SHOULD BE 2 HORIZONTAL TO 1 VERTICAL OR FLATTER. IF THE SLOPE IS TO BE MAINTAINED BY TRACTOR OR OTHER EQUIPMENT THE SLOPE SHOULD BE 3 HORIZONTAL TO 1 VERTICAL OR FLATTER. SLOPES SHOULD BE DESIGNED TO BLEND WITH SURROUNDING TOPOGRAPHY AS MUCH AS POSSIBLE.

EROSION CONTROL
THE GRADING PLAN SHOULD INCLUDE PROVISIONS FOR STABILIZATION OF GRADED AREAS IMMEDIATELY AFTER FINAL GRADING IS COMPLETED. ON AREAS THAT WILL HAVE NO ADDITIONAL DISTURBANCE, PERMANENT VEGETATION SHOULD BE APPLIED IMMEDIATELY TO THE SITE (SEE PERMANENT SEEDING PRACTICE) IF GRADING IS FINISHED DURING THE PLANTING SEASON. IF GRADING IS FINISHED OUTSIDE OF THE RECOMMENDED PLANTING DATES A TEMPORARY COVER SHOULD BE INSTALLED USING A TEMPORARY SEEDING OR OTHER APPROPRIATE COVER AND THE PERMANENT SEEDING PLANNED FOR THE NEXT PLANTING PERIOD. ON AREAS WHERE WORK IS TO BE INTERRUPTED OR DELAYED FOR 14 CALENDAR DAYS OR LONGER, SUCH AS TOPSOIL STOCKPILES, THE AREA SHOULD BE STABILIZED USING MULCH OR TEMPORARY SEEDING (SEE MULCHING OR TEMPORARY SEEDING PRACTICE). OTHER STABILIZATION MEASURES SUCH AS HYDRAULIC MULCH OR EROSION CONTROL BLANKETS SHOULD BE USED IN EXTREME CONDITIONS, SUCH AS STEEP SLOPES AND CHANNELS.
WHERE PRACTICAL, RUNOFF FROM UNDISTURBED OFF-SITE AREAS SHOULD BE DIVERTED AROUND THE CONSTRUCTION SITE TO PREVENT EROSION ON THE DISTURBED AREAS (SEE DIVERSION PRACTICE).

SEDIMENT CONTROL
REQUIRED SEDIMENT CONTROL PRACTICES SHOULD BE INSTALLED BEFORE THE LAND DISTURBANCE ACTIVITIES IN THE DRAINAGE AREA OF THE SEDIMENT CONTROL PRACTICES. UNTIL DISTURBED AREAS CAN BE STABILIZED, APPROPRIATE SEDIMENT CONTROL MEASURES WILL BE MAINTAINED TO MINIMIZE SEDIMENT DELIVERY OFF-SITE. MEASURES SHOULD INCLUDE AS A MINIMUM:
- SEDIMENT BARRIERS - PLACED ALONG TOES OF SLOPES (SEE SEDIMENT BARRIER PRACTICE).
- SEDIMENT BASINS - DIVERT SEDIMENT LADEN RUNOFF TO BASINS AS NEEDED TO MINIMIZE OFF-SITE SEDIMENTATION (SEE SEDIMENT BASIN PRACTICE).
- INLET PROTECTION - WHERE SEDIMENT-LADEN RUNOFF IS DIVERTED TO ON-SITE STORMWATER DRAIN INLETS, THE INLETS SHOULD BE PROTECTED WITH AN APPROPRIATE SEDIMENT CONTROL PRACTICE.
- STABILIZED OUTLETS - AL

DESIGN CRITERIA

SITE PREPARATION
BEFORE MULCHING, COMPLETE THE REQUIRED SITE PREPARATION. SITE PREPARATION INCLUDES GRADING, IF NEEDED, AND SEEDBED PREPARATION AND FERTILIZING, LIMING AND SEEDING IF A PLANTING IS BEING MADE BY MEANS OTHER THAN HYDROSEEDING.

SPREADING THE MULCH
SELECT A MULCH MATERIAL BASED ON THE SITE AND PRACTICE REQUIREMENTS, AVAILABILITY OF MATERIAL, AND AVAILABILITY OF LABOR AND EQUIPMENT. TABLE MU-2 LISTS COMMONLY USED MULCHES.

TABLE MU-2 MULCHING MATERIALS AND APPLICATION RATES

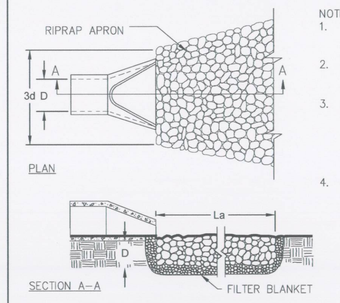
MATERIAL	RATE PER ACRE AND (PER 1000 FT.2)	NOTES
STRAW WITH SEED	1 ½-2 TONS (70 LBS-90 LBS)	SPREAD BY HAND OR MACHINE TO ATTAIN 75% GROUNDCOVER; ANCHOR WHEN SUBJECT TO BLOWING. SPREAD BY HAND OR MACHINE TO ATTAIN 75% GROUNDCOVER; ANCHOR WHEN SUBJECT TO BLOWING.
STRAW ALONE (NOSEED)	2 ½-3 TONS (115 LBS-160 LBS)	SPREAD BY HAND OR MACHINE; ANCHOR WHEN SUBJECT TO BLOWING.
WOOD CHIPS	5-6 TONS (225 LBS-270 LBS)	TREAT WITH 12 LBS. NITROGEN/TON.
BARK	35 CUBIC YARDS (0.8 CUBIC YARD)	CAN APPLY WITH MULCH BLOWER.
PINE STRAW	1-2 TONS (45 LBS-90 LBS)	SPREAD BY HAND OR MACHINE; WILL NOT BLOW LIKE STRAW.
PEANUT HULLS	10-20 TONS (450 LBS-900 LBS)	WILL WASH OFF SLOPES. TREAT WITH 12 LBS. NITROGEN/TON.
HECPS	0.75 - 2.25 TONS (35 LBS - 103 LBS)	REFER TO ECTC OR MANUFACTURER'S SPECIFICATIONS.

UNIFORMLY SPREAD ORGANIC MULCHES BY HAND OR WITH A MULCH BLOWER AT A RATE WHICH PROVIDES ABOUT 75% GROUND COVER. SPREAD HECPS UTILIZING APPROPRIATE EQUIPMENT AND AT RATES AS SPECIFIED WHEN SPREADING STRAW MULCH BY HAND, DIVIDE THE AREA TO BE MULCHED INTO SECTIONS OF APPROXIMATELY 1000 SQ. FT. AND PLACE 70-90 POUNDS OF STRAW (1 ½ TO 2 BALES) IN EACH SECTION TO FACILITATE UNIFORM DISTRIBUTION. CAUTION, AN OVER-APPLICATION OF WHEAT STRAW WILL REDUCE STAND SUCCESS - DO NOT OVER-APPLY WHEAT STRAW WHEN MULCHING A SEEDING
WHEN STRAW MULCH IS SUBJECT TO BE BLOWN AWAY BY WIND, IT MUST BE ANCHORED IMMEDIATELY AFTER SPREADING. IT IS BEST ANCHORED WITH A MULCH ANCHORING TOOL
APPLICATION OF A COMMERCIAL TACKIFIER THROUGH A HYDROSEEDER IS OFTEN PRACTICAL FOR STEEP SLOPES AND CAN BE EFFECTIVE ON MOST SITES. BINDERS (TACKIFIERS) MAY BE APPLIED AFTER MULCH IS SPREAD OR MAY BE SPRAYED INTO THE MULCH AS IT IS BEING BLOWN ONTO THE SOIL. APPLYING STRAW AND BINDER TOGETHER IS THE MOST EFFECTIVE METHOD.
LIQUID BINDERS INCLUDE AN ARRAY OF COMMERCIALLY AVAILABLE SYNTHETIC BINDERS AND ORGANIC TACKIFIERS.
IN HIGH WIND SITUATIONS LIKE ROADWAYS, CRIMPING THE MULCH IS THE BEST ALTERNATIVE AS THE USE OF MULCH BINDERS MAY STILL RESULT IN THE MULCH BEING ROLLED UP ON THE EDGE.
STRAW MULCH MAY ALSO BE ANCHORED WITH LIGHTWEIGHT PLASTIC, COTTON, JUTE, WIRE OR PAPER NETTING WHICH IS STAPLED OVER THE MULCH. THE MANUFACTURER'S RECOMMENDATIONS ON STAPLING NETTING SHOULD BE FOLLOWED.

MAINTENANCE
INSPECT ALL MULCHES PERIODICALLY, AND AFTER RAINSTORMS TO CHECK FOR RILL EROSION, DISLOCATION, OR FAILURE. WHERE EROSION IS OBSERVED, APPLY ADDITIONAL MULCH OR IF WASHOUT HAS OCCURRED, REPAIR THE SLOPE GRADE, RESEED, AND REINSTALL MULCH.
CONTINUE INSPECTIONS UNTIL VEGETATION IS FIRMLY ESTABLISHED.

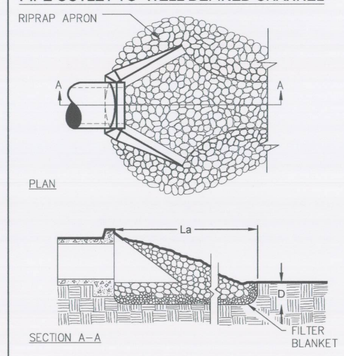
MU MULCHING

PIPE OUTLET TO FLAT AREA -- NO WELL DEFINED CHANNEL



NOTES:
1. La IS THE LENGTH OF THE RIPRAP APRON.
2. D = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6".
3. IN A WELL-DEFINED CHANNEL, EXTEND THE APRON UP THE CHANNEL BANKS TO AN ELEVATION OF 6" ABOVE THE MAXIMUM TAILWATER DEPTH OR TO THE TOP OF THE BANK (WHICHEVER IS LESS).
4. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND THE SOIL FOUNDATION.

PIPE OUTLET TO WELL DEFINED CHANNEL



OP RIPRAP OUTLET PROTECTION 1/903

DESIGN CRITERIA
STRUCTURALLY LINED APRONS AT THE OUTLETS OF PIPES AND PAVED CHANNEL SECTIONS SHOULD BE DESIGNED ACCORDING TO THE FOLLOWING CRITERIA:

PIPE OUTLETS
CAPACITY
THE STRUCTURALLY LINED APRON SHOULD HAVE THE CAPACITY TO CARRY THE PEAK STORMFLOW FROM THE 25-YEAR 24-HOUR FREQUENCY STORM OR THE STORM SPECIFIED IN STATE LAWS OR LOCAL ORDINANCES OR THE DESIGN DISCHARGE OF THE WATER CONVEYANCE STRUCTURE, WHICHEVER IS GREATEST.

TAILWATER
THE DEPTH OF TAILWATER IMMEDIATELY BELOW THE PIPE OUTLET MUST BE DETERMINED FOR THE DESIGN CAPACITY OF THE PIPE. MANNING'S EQUATION MAY BE USED TO DETERMINE TAILWATER DEPTH. MANNING'S EQUATION MAY BE FOUND IN THE PRACTICE GRASS SWALES. IF THE TAILWATER DEPTH IS LESS THAN HALF THE DIAMETER OF THE OUTLET PIPE, IT SHALL BE CLASSIFIED AS A MINIMUM TAILWATER CONDITION. IF THE TAILWATER DEPTH IS GREATER THAN HALF THE PIPE DIAMETER, IT SHALL BE CLASSIFIED AS A MAXIMUM TAILWATER CONDITION. PIPES WHICH OUTLET TO FLAT AREAS, WITH NO DEFINED CHANNEL, MAY BE ASSUMED TO HAVE A MINIMUM TAILWATER CONDITION.

APRON LENGTH
THE APRON LENGTH SHOULD BE DETERMINED FROM FIGURE OP-2 OR OP-3 ACCORDING TO THE TAILWATER CONDITION.

APRON THICKNESS
THE APRON THICKNESS SHOULD BE DETERMINED BY THE MAXIMUM STONE SIZE (DMAX), WHEN THE APRON IS LINED WITH RIPRAP. THE MAXIMUM STONE SIZE SHALL BE 1.5 X D50 (MEDIAN STONE SIZE), AS DETERMINED FROM FIGURE OP-2 OR OP-3. THE APRON THICKNESS SHALL BE 1.5 X DMAX.
WHEN THE APRON IS LINED WITH CONCRETE, THE MINIMUM THICKNESS OF THE CONCRETE SHALL BE 4".

APRON WIDTH
IF THE PIPE DISCHARGES DIRECTLY INTO A WELL-DEFINED CHANNEL, THE APRON SHOULD EXTEND ACROSS THE CHANNEL BOTTOM AND UP THE CHANNEL BANKS TO AN ELEVATION 1FOOT ABOVE THE MAXIMUM TAILWATER DEPTH OR TO THE TOP OF THE BANK, WHICHEVER IS THE LEAST.
IF THE PIPE DISCHARGES ONTO A FLAT AREA WITH NO DEFINED CHANNEL, THE WIDTH OF THE APRON SHOULD BE DETERMINED AS FOLLOWS:
- THE UPSTREAM END OF THE APRON, ADJACENT TO THE PIPE, SHOULD HAVE A WIDTH 3 TIMES THE DIAMETER OF THE OUTLET PIPE.
- FOR A MINIMUM TAILWATER CONDITION, THE DOWNSTREAM END OF THE APRON SHOULD HAVE A WIDTH EQUAL TO THE PIPE DIAMETER PLUS THE LENGTH OF THE APRON OBTAINED FROM THE FIGURES.
- FOR A MAXIMUM TAILWATER CONDITION, THE DOWNSTREAM END SHALL HAVE A WIDTH EQUAL TO THE PIPE DIAMETER PLUS 0.4 TIMES THE LENGTH OF THE APRON FROM FIGURES OP-2 OR OP-3.

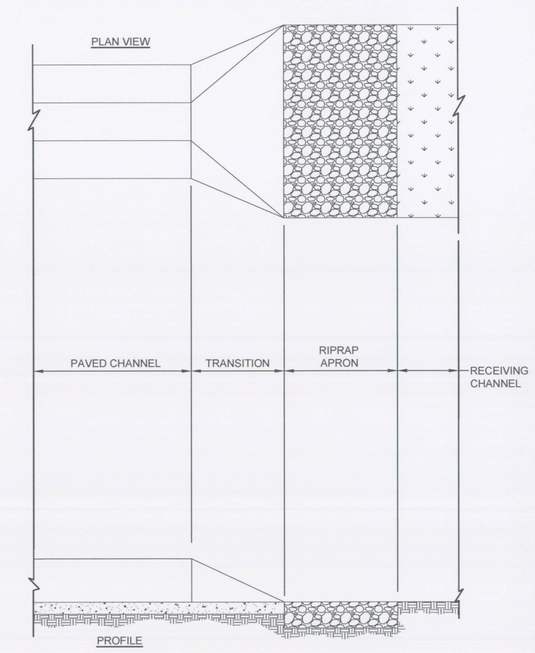
BOTTOM GRADE
THE APRON SHOULD BE CONSTRUCTED WITH NO SLOPE ALONG ITS LENGTH (0.0% GRADE). THE INVERT ELEVATION OF THE DOWNSTREAM END OF THE APRON SHALL BE EQUAL TO THE ELEVATION OF THE INVERT OF THE RECEIVING CHANNEL. THERE SHALL BE NO OVERFALL AT THE END OF THE APRON.

SIDE SLOPE
IF THE PIPE DISCHARGES INTO A WELL-DEFINED CHANNEL, THE SIDE SLOPES OF THE CHANNEL SHOULD NOT BE STEEPER THAN 2:1 (HORIZONTAL:VERTICAL).

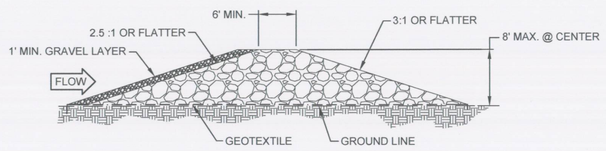
ALIGNMENT
THE APRON SHOULD BE LOCATED SO THAT THERE ARE NO BENDS IN THE HORIZONTAL ALIGNMENT.

GEOTEXTILE
WHEN RIPRAP IS USED TO LINE THE APRON, NON-WOVEN GEOTEXTILE SHOULD BE USED AS A SEPARATOR BETWEEN THE GRADED STONE, THE SOIL SUBGRADE, AND THE ABUTMENTS. GEOTEXTILE SHOULD BE PLACED IMMEDIATELY ADJACENT TO THE SUBGRADE WITHOUT ANY VOIDS BETWEEN THE FABRIC AND THE SUBGRADE. THE GEOTEXTILE WILL PREVENT THE MIGRATION OF SOIL PARTICLES FROM THE SUBGRADE INTO THE GRADED STONE. THE GEOTEXTILE SHALL BE OF THE STRENGTH AND DURABILITY REQUIRED FOR THE PROJECT TO ENSURE THE AGGREGATE AND SOIL BASE ARE STABLE. GENERALLY, THE NON-WOVEN GEOTEXTILE SHOULD MEET THE REQUIREMENTS FOUND IN ASSHTO M288.

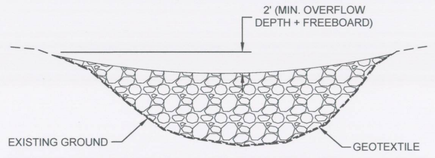
MATERIALS
THE APRON MAY BE LINED WITH LOOSE ROCK RIPRAP, GROUTED RIPRAP, OR CONCRETE. THE MEDIAN SIZED STONE FOR RIPRAP SHOULD BE DETERMINED FROM THE CURVES ON FIGURE OP-2 AND OP-3 ACCORDING TO THE TAILWATER CONDITION.
AFTER THE MEDIAN STONE SIZE IS DETERMINED, THE GRADATION OF ROCK TO BE USED SHOULD BE SPECIFIED USING TABLES OP-2 AND OP-3. TABLE OP-2 IS USED TO DETERMINE THE WEIGHT OF THE MEDIAN STONE SIZE (D50). USING THIS MEDIAN WEIGHT, A GRADATION CAN BE SELECTED FROM TABLE OP-3, WHICH SHOWS THE COMMERCIALLY AVAILABLE RIPRAP GRADATIONS AS CLASSIFIED BY THE ALABAMA DEPARTMENT OF TRANSPORTATION.
STONE FOR RIPRAP SHOULD CONSIST OF FIELD STONE OR ROUGH UNHEWN QUARRY STONE OF APPROXIMATELY RECTANGULAR SHAPE. THE STONE SHOULD BE HARD AND ANGULAR AND OF SUCH QUALITY THAT IT WILL NOT DISINTEGRATE ON EXPOSURE TO WATER OR WEATHERING AND IT SHALL BE SUITABLE IN ALL OTHER RESPECTS FOR THE PURPOSE INTENDED. THE SPECIFIC GRAVITY OF THE INDIVIDUAL STONES SHOULD BE AT LEAST 2.5.
WHEN THE APRON IS LINED WITH CONCRETE, THE CONCRETE SHOULD HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 3000 POUNDS PER SQUARE INCH. AMERICAN CONCRETE INSTITUTE GUIDELINES SHOULD BE USED TO DESIGN CONCRETE STRUCTURES AND REINFORCEMENT. AS A MINIMUM, THE CONCRETE SHOULD BE REINFORCED WITH STEEL WELDED WIRE FABRIC.



OP PAVED CHANNEL OUTLET



SECTION OF ROCK FILTER DAM



FRONT VIEW OF ROCK FILTER DAM

DESIGN CRITERIA

DRAINAGE AREA
THE DRAINAGE AREA ABOVE THE DAM SHOULD NOT EXCEED 10 ACRES.

DAM HEIGHT
THE HEIGHT OF DAM WILL BE LIMITED BY THE CHANNEL BANK HEIGHT OR 8 FEET, WHICHEVER IS LESS. THE DAM HEIGHT SHOULD ALSO NOT EXCEED THE ELEVATION OF THE UPSTREAM PROPERTY LINE. WATER WILL BYPASS OVER THE TOP OF THE DAM AND THE BACK SLOPE OF THE ROCK DAM SHOULD BE DESIGNED TO BE STABLE.

SPILLWAY CAPACITY
THE TOP OF THE DAM SHOULD BE DESIGNED TO HANDLE THE PEAK RUNOFF FROM A 10 YEAR, 24 HOUR DESIGN STORM WITH A MAXIMUM FLOW DEPTH OF 1 FOOT AND FREEBOARD OF 1 FOOT. THEREFORE, THE CENTER PORTION OF THE DAM SHOULD BE AT LEAST 2 FEET LOWER THAN THE OUTER EDGES AT THE ABUTMENT. SEE FIGURE RD-1.

DAM TOP WIDTH
THE MINIMUM TOP WIDTH SHOULD BE 6 FEET. SEE FIGURE RD-2.

DAM SIDE SLOPES
SIDE SLOPES SHOULD BE 3:1 OR FLATTER ON THE BACK SLOPE AND 2.5:1 OR FLATTER ON THE FRONT SLOPE.

OUTLET PROTECTION
THE DOWNSTREAM TOE OF THE DAM SHOULD BE PROTECTED FROM EROSION BY PLACING LARGER STONE ON THE BACK SLOPE AND A RIPRAP APRON AT THE TOE. THE APRON SHOULD BE PLACED ON A ZERO GRADE WITH A RIPRAP THICKNESS OF 1.5 FEET. THE APRON SHOULD HAVE A LENGTH EQUAL TO THE HEIGHT OF THE DAM AS A MINIMUM AND LONGER IF NEEDED TO PROTECT THE TOE OF THE DAM.

LOCATION
THE DAM SHOULD BE LOCATED AS CLOSE TO THE SOURCE OF SEDIMENT AS POSSIBLE SO THAT IT WILL NOT CAUSE WATER TO BACK UP ONTO ADJOINING PROPERTY.

BASIN REQUIREMENTS
THE BASIN BEHIND THE DAM SHOULD PROVIDE A SURFACE AREA THAT MAXIMIZES THE SEDIMENT TRAPPING EFFICIENCY. THE BASIN SHOULD HAVE A SEDIMENT STORAGE CAPACITY OF 67 CUBIC YARDS PER ACRE OF DRAINAGE AREA.

RIPRAP REQUIREMENTS
STONE FOR RIPRAP SHOULD CONSIST OF FIELD STONE OR ROUGH UNHEWN QUARRY STONE OF APPROXIMATELY RECTANGULAR SHAPE. THE STONE SHOULD BE HARD AND ANGULAR AND OF SUCH QUALITY THAT IT WILL NOT DISINTEGRATE ON EXPOSURE TO WATER OR WEATHERING AND IT SHOULD BE SUITABLE IN ALL OTHER RESPECTS FOR THE PURPOSE INTENDED. THE SPECIFIC GRAVITY OF THE INDIVIDUAL STONES SHOULD BE AT LEAST 2.5.
THE MINIMUM MEDIAN STONE SIZE SHOULD BE 9". THE GRADATION OF ROCK TO BE USED SHOULD BE SPECIFIED USING TABLES RD-1 AND RD-2. TABLE RD-1 IS USED TO DETERMINE THE WEIGHT OF THE MEDIAN STONE SIZE (D50). USING THIS MEDIAN WEIGHT, A GRADATION CAN BE SELECTED FROM TABLE RD-2, WHICH SHOWS THE COMMERCIALLY AVAILABLE RIPRAP GRADATIONS AS CLASSIFIED BY THE ALABAMA DEPARTMENT OF TRANSPORTATION.
THE DAM SHOULD BE FACED WITH 1 FOOT OF SMALLER STONE (½" TO ¾" GRAVEL) ON THE UPSTREAM SIDE TO INCREASE EFFICIENCY FOR TRAPPING COARSER PARTICLES. GEOTEXTILE CAN ALSO BE ADDED BETWEEN THE SMALLER STONE AND ROCK.

Table RD-1 Size of Riprap Stones

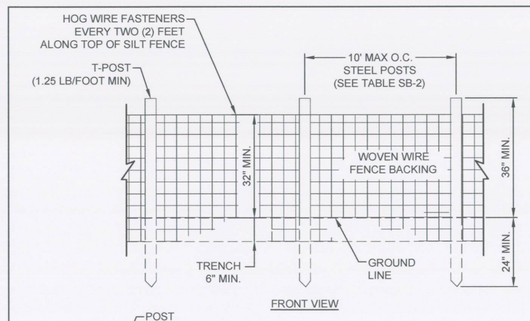
Weight	Mean Spherical Diameter (ft)	Rectangular Shape	
		Length	Width, Height (ft)
50	0.8	1.4	0.5
100	1.1	1.75	0.6
150	1.3	2.0	0.67
300	1.6	2.6	0.9
500	1.9	3.0	1.0
1000	2.2	3.7	1.25
1500	2.6	4.7	1.5
2000	2.75	5.4	1.8
4000	3.6	6.0	2.0
6000	4.0	6.9	2.3
8000	4.5	7.6	2.5
20000	6.1	10.0	3.3

GEOTEXTILES
NON-WOVEN GEOTEXTILES SHOULD BE USED AS A SEPARATOR BETWEEN THE GRADED STONE, THE SOIL BASE AND THE ABUTMENTS. THE GEOTEXTILE SHALL BE OF THE STRENGTH AND DURABILITY REQUIRED FOR THE PROJECT TO ENSURE THE ROCK AND SOIL BASE ARE STABLE. GENERALLY, THE NON-WOVEN GEOTEXTILE SHOULD MEET THE REQUIREMENTS FOUND IN ASSHTO M288. GEOTEXTILE SHOULD BE PLACED IMMEDIATELY ADJACENT TO THE SUBGRADE WITHOUT ANY VOIDS BETWEEN THE FABRIC AND THE SUBGRADE.

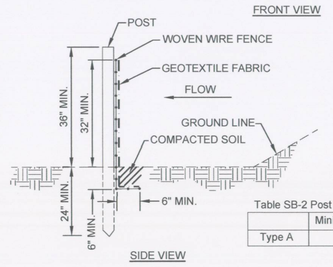
Table RD-2 Graded Riprap

Class	Weight (lbs.)					
	d_{10}	d_{15}	d_{25}	d_{50}	d_{75}	d_{90}
1	10	-	-	50	-	100
2	10	-	-	80	-	200
3	-	25	-	200	-	500
4	-	-	50	500	1000	-
5	-	-	200	1000	-	2000

RD ROCK FILTER DAM



FRONT VIEW



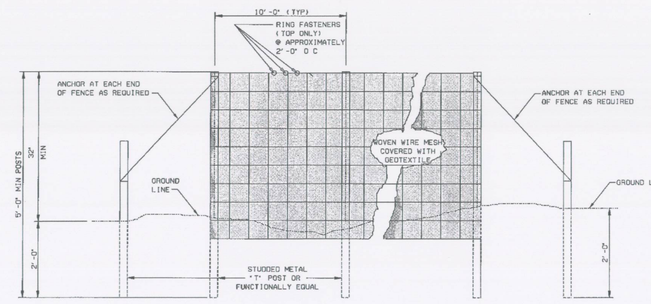
SIDE VIEW

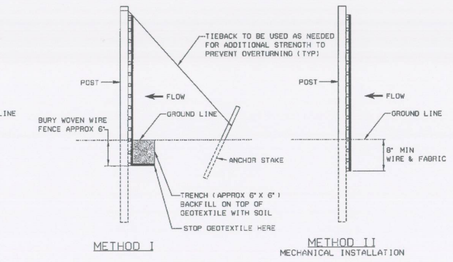
Table SB-2 Post Size for Silt Fence

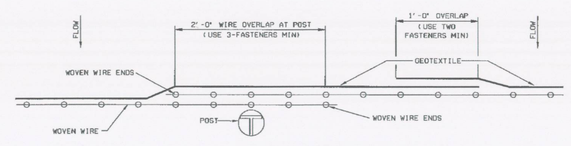
	Minimum Length	Type of Post	Size of Post
Type A	5'	Steel "T" Post	1.3 lb./ft. min.

NOTES:
1. WOVEN WIRE FENCE SHALL BE A MINIMUM 14 GAUGE, 6"X6".
2. THE WOVEN WIRE FENCING SHALL BE FASTENED TO THE UPSTREAM SIDE OF POSTS BY STAPLES OR WIRE TIES.
3. GEOTEXTILE FABRIC SHALL BE SECURELY FASTENED TO THE WOVEN WIRE FENCING.
4. MACHINE TRENCHED GEOTEXTILE SHALL BE TRENCHED VERTICAL AT LEAST 8" DEEP.

SB SILT FENCE - TYPE A







REQUIRED LAPPING

NOTES:
1. METHOD II FENCE INSTALLATION ALSO TO INCLUDE ANCHORS AND TIEBACKS AS REQUIRED.
2. SILT FENCE SHALL BE USED IN AREAS WHERE FLOW IS LOW TO MODERATE OR AS DIR BY THE ENGINEER.
3. SILT FENCES ARE TEMPORARY SEDIMENT CONTROL ITEMS THAT SHALL BE ERECTED DOWN GRADE OF ERODIBLE AREAS SUCH AS NEWLY GRADED FILL SLOPES AND ADJACENT TO STREAMS AND CHANNELS.
4. SILT FENCE SHOULD BE PLACED WELL INSIDE RIGHT-OF-WAY AND ALONG EDGE OF CLEARING LIMITS. THIS WILL ALLOW ROOM FOR ADDITIONAL BEST MANAGEMENT PRACTICES SUCH AS VEGETATED BUFFERS.
5. WHEREVER POSSIBLE SILT FENCES SHALL BE CONSTRUCTED ACROSS A LEVEL AREA IN THE SHAPE OF A SMILE. THIS AIDS IN PONDING OF RUNOFF AND FACILITATE SEDIMENTATION.
6. THE CONTRACTOR MAY ELECT TO USE EITHER INSTALLATION METHOD I OR METHOD II.
7. METHOD II INSTALLATION SHALL BE ACCOMPLISHED USING AN IMPLEMENT THAT IS MANUFACTURED FOR THE APPLICATION AND PROVIDES A CONFIGURATION MEETING THE REQUIREMENTS OF THE DETAIL.
8. SEE ALDOT LIST II-3 FOR APPROVED SILT FENCE GEOTEXTILES.

SB SILT FENCE - INSTALLATION

DESIGN CRITERIA

CAPACITY

LINED SWALES SHALL BE DESIGNED TO CONVEY THE PEAK RATE OF RUNOFF FROM A 10-YEAR 24-HOUR RAINFALL EVENT. ADJUSTMENTS SHOULD BE MADE FOR RELEASE RATES FROM STRUCTURES AND OTHER DRAINAGE FACILITIES. SWALES SHOULD ALSO BE DESIGNED TO COMPLY WITH LOCAL STORMWATER ORDINANCES.

SWALES SHOULD BE DESIGNED FOR GREATER CAPACITY WHENEVER THERE IS DANGER OF FLOODING OR OUT OF BANK FLOW CANNOT BE TOLERATED. THE MAXIMUM CAPACITY OF THE SWALE FLOWING AT DESIGN DEPTH SHOULD BE 200 CUBIC FT/SEC.

PEAK RATES OF RUNOFF VALUES USED TO DETERMINE THE CAPACITY REQUIREMENTS SHOULD BE CALCULATED USING ACCEPTED ENGINEERING METHODS. SOME ACCEPTED METHODS ARE:

- NATURAL RESOURCES CONSERVATION SERVICE, NATIONAL ENGINEERING HANDBOOK SERIES, PART 650, ENGINEERING FIELD HANDBOOK, CHAPTER 2, ESTIMATING RUNOFF.
- NATURAL RESOURCES CONSERVATION SERVICE FORMERLY SOIL CONSERVATION SERVICE, TECHNICAL RELEASE 55, URBAN HYDROLOGY FOR SMALL WATERSHEDS.
- OTHER COMPARABLE METHODS.

CROSS SECTION

THE SWALE CROSS SECTION SHOULD BE TRAPEZOIDAL IN SHAPE. THE STEEPEST PERMISSIBLE SIDE SLOPE OF THE SWALE SHOULD BE 2:1. A BOTTOM WIDTH SHOULD BE SELECTED BASED ON AREA AVAILABLE FOR INSTALLATION OF THE SWALE AND AVAILABLE ROCK SIZES. THE BOTTOM WIDTH WILL BE USED IN DETERMINING STABLE ROCK SIZE AND FLOW DEPTH.

DEPTH

DESIGN FLOW DEPTH SHOULD BE DETERMINED BY THE FOLLOWING FORMULA:

Z = [N(Q)/1.486(S)0.5]0]/5 S = BED SLOPE, FT./FT. Z = FLOW DEPTH, FT. Q = UNIT DISCHARGE, FT3/S/FT (TOTAL DISCHARGE ÷ BOTTOM WIDTH) N = MANNING'S COEFFICIENT OF ROUGHNESS (SEE FORMULA UNDER VELOCITIES)

THE DESIGN WATER SURFACE ELEVATION OF A SWALE RECEIVING WATER FROM OTHER TRIBUTARY SOURCES SHOULD BE EQUAL TO OR LESS THAN THE DESIGN WATER SURFACE ELEVATION OF THE CONTRIBUTING SOURCE. THE DESIGN WATER SURFACE ELEVATION OF CONTRIBUTING AND RECEIVING WATERS SHOULD BE THE SAME, WHENEVER PRACTICAL. A MINIMUM DEPTH MAY BE NECESSARY TO PROVIDE ADEQUATE OUTLETS FOR SUBSURFACE DRAINS AND TRIBUTARY SWALES.

FREEBOARD

THE MINIMUM FREEBOARD IS 0.25 FEET. FREEBOARD IS NOT REQUIRED ON SWALES WITH LESS THAN 1% SLOPE AND WHERE OUT-OF-BANK FLOW WILL NOT BE DAMAGING AND CAN BE TOLERATED FROM AN OPERATIONAL POINT OF VIEW.

STABLE ROCK SIZE

STABLE ROCK SIZES, FOR ROCK LINED SWALES HAVING GRADIENTS BETWEEN 2 PERCENT AND 40 PERCENT SHOULD BE DETERMINED USING THE FOLLOWING FORMULAS FROM DESIGN OF ROCK CHUTES BY ROBINSON, RICE, AND KADAVY.

FOR SWALE SLOPES BETWEEN 2% AND 10%: D50 = [Q (S)1.5/4.75(10)-3]1/1.89

FOR SWALE SLOPES BETWEEN 10% AND 40%: D50 = [Q (S)0.58/3.93(10)-2]1/1.89

D50 = PARTICLE SIZE FOR WHICH 50 % OF THE SAMPLE IS FINER, INCH
S = BED SLOPE, FT./FT.
Q = UNIT DISCHARGE, FT3/S/FT.
(TOTAL DISCHARGE ÷ BOTTOM WIDTH)

AFTER THE STABLE MEDIAN STONE SIZE IS DETERMINED, THE GRADATION OF ROCK TO BE USED SHOULD BE SPECIFIED USING TABLES RS-1 AND RS-2. TABLE RS-1 IS USED TO DETERMINE THE WEIGHT OF THE MEDIAN STONE SIZE (D50). USING THIS MEDIAN WEIGHT, A GRADATION CAN BE SELECTED FROM TABLE RS-2, WHICH SHOWS THE COMMERCIALLY AVAILABLE RIPRAP GRADATIONS AS CLASSIFIED BY THE ALABAMA DEPARTMENT OF TRANSPORTATION.

Table RS-1 Size of Riprap Stones

Weight (lbs.)	Mean Spherical Diameter (feet)	Rectangular Shape	
		Length	Width, Height (feet)
50	0.8	1.4	0.5
100	1.1	1.75	0.6
150	1.3	2.0	0.67
300	1.6	2.6	0.9
500	1.9	3.0	1.0
1000	2.2	3.7	1.25
1500	2.6	4.7	1.5
2000	2.75	5.4	1.8
4000	3.6	6.0	2.0
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8000	4.5	7.6	2.5
20000	6.1	10.0	3.3

Table RS-2 Graded Riprap

Class	Weight (lbs.)					
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1	10	-	-	50	-	100
2	10	-	-	80	-	200
3	-	25	-	200	-	500
4	-	-	50	500	1000	-
5	-	-	200	1000	-	2000

VELOCITIES

VELOCITIES SHOULD BE COMPUTED BY USING MANNING'S FORMULA WITH A COEFFICIENT OF ROUGHNESS, "N", AS FOLLOWS: N = 0.047(D50 S)0.147

APPLIES ON SLOPES BETWEEN 2 AND 40% WITH A ROCK MANTLE THICKNESS OF 2 X D50 WHERE: D50 = MEDIAN ROCK DIAMETER (INCH), S = LINED SECTION SLOPE (FT./FT.) (.02<S<.4)

VELOCITIES EXCEEDING CRITICAL VELOCITY SHOULD BE RESTRICTED TO STRAIGHT REACHES.

WATERWAYS OR OUTLETS WITH VELOCITIES EXCEEDING CRITICAL VELOCITY SHOULD DISCHARGE INTO AN OUTLET PROTECTION STRUCTURE TO REDUCE DISCHARGE VELOCITY TO LESS THAN CRITICAL (SEE OUTLET PROTECTION PRACTICE).

LINING THICKNESS

THE MINIMUM LINING THICKNESS SHOULD BE EQUAL TO THE MAXIMUM STONE SIZE OF THE SPECIFIED RIPRAP GRADATION PLUS THE THICKNESS OF ANY REQUIRED FILTER OR BEDDING.

LINING DURABILITY

STONE FOR RIPRAP SHOULD CONSIST OF FIELD STONE OR ROUGH UNHEWN QUARRY STONE OF APPROXIMATELY RECTANGULAR SHAPE. THE STONE SHOULD BE HARD AND ANGULAR AND OF SUCH QUALITY THAT IT WILL NOT DISINTEGRATE ON EXPOSURE TO WATER OR WEATHERING AND IT SHOULD BE SUITABLE IN ALL OTHER RESPECTS FOR THE PURPOSE INTENDED. THE SPECIFIC GRAVITY OF THE INDIVIDUAL STONES SHOULD BE AT LEAST 2.5.

GEOTEXTILES

NON- WOVEN GEOTEXTILES SHOULD BE USED WHERE APPROPRIATE AS A SEPARATOR BETWEEN ROCK AND SOIL TO PREVENT MIGRATION OF SOIL PARTICLES FROM THE SUBGRADE. THROUGH THE LINING MATERIAL. THE GEOTEXTILE SHALL BE OF THE STRENGTH AND DURABILITY REQUIRED FOR THE PROJECT TO ENSURE THE ROCK AND SOIL BASE ARE STABLE. GENERALLY, THE NON-WOVEN GEOTEXTILE SHOULD MEET THE REQUIREMENTS FOUND IN AASHTO M288 FOR A CLASS 2 SEPARATION GEOTEXTILE.

FILTERS OR BEDDING

FILTERS OR BEDDING SHOULD BE USED WHERE NEEDED TO PREVENT PIPING. FILTERS SHOULD BE DESIGNED ACCORDING TO THE REQUIREMENTS CONTAINED IN THE SUBSURFACE DRAIN STANDARD. THE MINIMUM THICKNESS OF A FILTER OR BEDDING SHOULD BE 6".

Rs RIP RAP-LINED SWALE 2/903

wood.
1075 BIG SHANTY ROAD, NW
SUITE 100
KENNESAW, GA 30144
TEL: (770) 421-3400

ALABAMA LICENSED No. 29907 PROFESSIONAL ENGINEER GILBERT M. HAINES
05/29/19

NOT VALID WITHOUT SIGNATURE AND DATE

PROJECT:

Alabama Power

PLANT E.C. GASTON

31972 HIGHWAY 25
WILSONVILLE, ALABAMA

PROJECT No:
6166-18-0770

REVISIONS

NO.	DATE	BY	APPROVED

DESIGNED BY:	T. CELEDON
DRAWN BY:	T. CELEDON
CHECKED BY:	G. HAINES
APPROVED BY:	G. HAINES
DATE:	05/15/2019

SHEET TITLE:

CBMPP DETAILS - II

SHEET NUMBER:	REV. #
GAS_3.2.4_903	0

DESIGN CRITERIA
PLANT SELECTION
SELECT PLANTS THAT CAN BE EXPECTED TO MEET PLANTING OBJECTIVES. TO SIMPLIFY PLANT SELECTION, USE FIGURE PS-1 GEOGRAPHICAL AREAS FOR SPECIES ADAPTATION AND SEEDING DATES AND TABLE PS-1, COMMONLY USED PLANTS FOR PERMANENT COVER. MIXTURES COMMONLY SPECIFIED BY THE ALABAMA DEPARTMENT OF TRANSPORTATION ARE AN APPROPRIATE ALTERNATIVE FOR PLANTINGS ON RIGHTS-OF-WAYS. ADDITIONAL INFORMATION RELATED TO PLANTS COMMONLY USED IN ALABAMA IS FOUND IN CHAPTER 2 UNDER THE SECTION VEGETATION FOR EROSION AND SEDIMENT CONTROL.
THE PLANTS USED FOR TEMPORARY VEGETATION MAY BE USED FOR COMPANION PLANTS PROVIDED THE SEEDING RATE OF THE ANNUAL SPECIES IS REDUCED BY ONE HALF. SEE THE TEMPORARY SEEDING PRACTICE FOR ADDITIONAL INFORMATION ON ESTABLISHING TEMPORARY VEGETATION. RYEGRASS OR OTHER HIGHLY COMPETITIVE PLANTS SHOULD NOT BE USED AS A COMPANION PLANT.

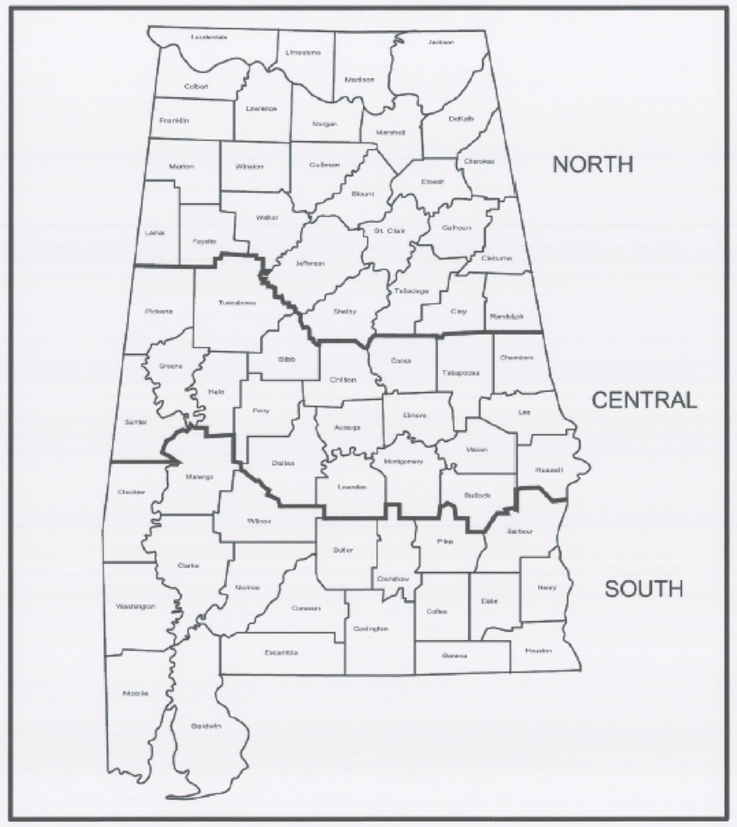


FIGURE PS-1 GEOGRAPHICAL AREAS FOR SPECIES ADAPTATION AND SEEDING DATES

NOTE: SITE CONDITIONS RELATED TO SOILS AND ASPECT IN COUNTIES ADJACENT TO OR CLOSE TO COUNTY BOUDARIES MAY JUSTIFY ADJUSTMENTS IN PLANTING DATES BY QUALIFIED DESIGN PROFESSIONALS.

Table PS-1 Commonly Used Plants for Permanent Cover with Seeding Rates and Dates

Species	Seeding Rates/Ac PLS	North	Central	South
		Seeding Dates		
Bahiagrass, Pensacola	40 lbs	--	Mar 1-July 1	Feb 1-Nov 1
Bermudagrass, Common	10 lbs	Apr 1-July 1	Mar 15-July 15	Mar 1-July 15
Bahiagrass, Pensacola Bermudagrass, Common	30 lbs 5 lbs	--	Mar 1-July 1	Mar 1-July 15
Bermudagrass, Hybrid (Lawn Types)	Solid Sod	Anytime	Anytime	Anytime
Bermudagrass, Hybrid (Lawn Types)	Sprigs 1/sq ft	Mar 1-Aug 1	Mar 1-Aug 1	Feb 15-Sep 1
Fescue, Tall	40-50 lbs	Sep 1-Nov 1	Sep 1-Nov 1	--
Sericea	40-60 lbs	Mar 15-July 15	Mar 1-July 15	Feb 15-July 15
Sericea & Common Bermudagrass	40lbs 10 lbs	Mar 15-July 15	Mar 1-July 15	Feb 15-July 15
Switchgrass, Alamo	4 Lbs	Apr 1-Jun 15	Mar 15-Jun 15	Mar 15-Jun15

PLS means pure live seed and is used to adjust seeding rates. For example, to plant 10 lbs PLS of a species with germination of 80% and purity of 90%, PLS= 0.8X 0.9 = 72%. 10 lbs PLS = 10/0.72 = 13.9 lbs of the species to be planted.

SEEDBED REQUIREMENTS
ESTABLISHMENT OF VEGETATION SHOULD NOT BE ATTEMPTED ON SITES THAT ARE UNSUITABLE DUE TO COMPACTION OR INAPPROPRIATE SOIL TEXTURE, POOR DRAINAGE, CONCENTRATED OVERLAND FLOW, OR STEEPNESS OF SLOPE UNTIL MEASURES HAVE BEEN COMPLETED TO CORRECT THESE PROBLEMS. TO MAINTAIN A GOOD STAND OF VEGETATION; THE SOIL MUST MEET CERTAIN MINIMUM REQUIREMENTS AS A GROWTH MEDIUM. A GOOD GROWTH MEDIUM SHOULD HAVE THESE ATTRIBUTES:

- SUFFICIENT PORE SPACE TO PERMIT ROOT PENETRATION.
- ENOUGH FINE-GRAINED SOIL MATERIAL (SILT AND CLAY) TO MAINTAIN ADEQUATE MOISTURE AND NUTRIENT SUPPLY.
- SUFFICIENT DEPTH OF SOIL TO PROVIDE AN ADEQUATE ROOT ZONE. THE DEPTH TO ROCK OR IMPERMEABLE LAYERS SUCH AS HARDPANS SHOULD BE 12"± OR MORE, EXCEPT ON SLOPES STEEPER THAN 2:1 WHERE TOPSOILING IS NOT FEASIBLE.
- A FAVORABLE PH RANGE FOR PLANT GROWTH, USUALLY 6.0-6.5.
- SUFFICIENT NUTRIENTS (NITROGEN, PHOSPHORUS AND POTASSIUM) FOR INITIAL PLANT ESTABLISHMENT.
- FREEDOM FROM LARGE ROOTS, BRANCHES, STONES, OR LARGE CLODS. CLODS AND STONES MAY BE LEFT ON SLOPES STEEPER THAN 3:1 IF THEY ARE TO BE HYDROSEEDED.

IF ANY OF THE ABOVE ATTRIBUTES ARE NOT MET: I.E., IF THE EXISTING SOIL IS TOO DENSE, COARSE, SHALLOW OR ACIDIC TO FOSTER VEGETATION – CHISELING, TOPSOIL, OR SPECIAL AMENDMENTS SHOULD BE USED TO IMPROVE SOIL CONDITIONS. THE SOIL CONDITIONERS DESCRIBED BELOW MAY BE BENEFICIAL OR TOPSOIL MAY BE APPLIED (FOR GUIDANCE ON TOPSOILING SEE TOPSOILING PRACTICE). THESE AMENDMENTS SHOULD ONLY BE NECESSARY WHERE SOILS HAVE LIMITATIONS THAT MAKE THEM POOR FOR PLANT GROWTH OR FOR TURF ESTABLISHMENT.

- PEAT-APPROPRIATE TYPES ARE SPHAGNUM MOSS PEAT, REED-SEDGE PEAT, OR PEAT HUMUS, ALL FROM FRESH-WATER SOURCES. PEAT SHOULD BE SHREDDED AND CONDITIONED IN STORAGE PILES FOR AT LEAST 6 MONTHS AFTER EXCAVATION.
- SAND-SHOULD BE CLEAN AND FREE OF TOXIC MATERIALS.
- VERMICULITE-USE HORTICULTURAL GRADE.
- ROTTED MANURE-USE STABLE OR CATTLE MANURE NOT CONTAINING UNDUE AMOUNTS OF STRAW OR OTHER BEDDING MATERIALS.
- THOROUGHLY ROTTED SAWDUST-SHOULD BE FREE OF STONES AND DEBRIS. ADD 6 LBS OF NITROGEN TO EACH CUBIC YARD.

SOIL AMENDMENTS
LIMING MATERIALS
LIME (AGRICULTURAL LIMESTONE) SHOULD HAVE A NEUTRALIZING VALUE OF NOT LESS THAN 90 PERCENT CALCIUM CARBONATE EQUIVALENT AND 90 PERCENT. WILL PASS THROUGH A 10 MESH SIEVE AND 50 PERCENT WILL PASS THROUGH A 60 MESH SIEVE.
SELMA CHALK SHOULD HAVE A NEUTRALIZING VALUE OF NOT LESS THAN 80 PERCENT CALCIUM CARBONATE EQUIVALENT AND 90 PERCENT WILL PASS THROUGH A 10 MESH SIEVE.
OTHER LIMING MATERIALS THAT MAY BE SELECTED SHOULD BE PROVIDED IN AMOUNTS THAT PROVIDE EQUAL VALUE TO THE CRITERIA LISTED FOR AGRICULTURAL LIME OR BE USED IN COMBINATION WITH AGRICULTURAL LIMESTONE OR SELMA CHALK TO PROVIDE EQUIVALENT VALUES TO AGRICULTURAL LIMESTONE.

PLANT NUTRIENTS
COMMERCIAL GRADE FERTILIZERS THAT COMPLY WITH CURRENT ALABAMA FERTILIZER LAWS SHOULD BE USED TO SUPPLY NUTRIENTS REQUIRED TO ESTABLISH VEGETATION.
LIME AND FERTILIZER NEEDS SHOULD BE DETERMINED BY SOIL TESTS. SOIL TESTING IS PERFORMED BY THE AUBURN UNIVERSITY SOIL TESTING LABORATORY AND PROVIDES RECOMMENDATIONS BASED ON FIELD TESTS ON ALABAMA SOILS. THE LOCAL COUNTY COOPERATIVE EXTENSION SERVICE CAN PROVIDE INFORMATION ON OBTAINING SOIL TESTS. COMMERCIAL LABORATORIES THAT MAKE RECOMMENDATIONS BASED ON SOIL ANALYSIS MAY BE USED.
WHEN SOIL TESTS ARE NOT AVAILABLE, USE THE FOLLOWING RATES FOR APPLICATION OF SOIL AMENDMENTS.
SANDY SOILS: USE 1 TON/ACRE (EXCEPTION ON SANDY SOILS – IF THE COVER WILL BE TALL FESCUE AND CLOVER) USE 2 TONS/ACRE.
CLAYEY SOILS: 2 TONS/ACRE.
(DO NOT APPLY LIME TO ALKALINE SOILS).
GRASSES ALONE: USE 400 LBS/ACRE OF 8-24-24 OR THE EQUIVALENT. APPLY 30 LBS OF ADDITIONAL NITROGEN WHEN GRASS HAS EMERGED AND BEGUN GROWTH (APPROXIMATELY 0.8LBS/1000 FT2).
GRASS-LEGUME MIXTURES: USE 800 TO 1200 LBS/ACRE OF 5-10-10 OR THE EQUIVALENT.
LEGUMES ALONE: USE 400 TO 600 LBS/ACRE OF 0-20-20 OR THE EQUIVALENT.
NOTE: FERTILIZER CAN BE BLENDED TO MEET EXACT FERTILIZER RECOMMENDATIONS. TAKE SOIL TEST RECOMMENDATIONS TO LOCAL FERTILIZER DEALER FOR BULK FERTILIZER BLENDS. THIS MAY BE MORE ECONOMICAL THAN BAGGED FERTILIZER.

APPLICATION OF SOIL AMENDMENTS
APPLY LIME AND FERTILIZER EVENLY AND INCORPORATE INTO THE TOP 6"± OF SOIL BY DISKING, CHISELING OR OTHER SUITABLE MEANS DURING SEEDBED PREPARATION. OPERATE MACHINERY ON THE CONTOUR. ON SITES TOO STEEP FOR SEEDBED PREPARATION, FERTILIZER AND LIME CAN BE APPLIED WITH A HYDROSEEDER.

SEEDBED PREPARATION
IF NEEDED, GRADE AND SHAPE TO PROVIDE A SURFACE ON WHICH EQUIPMENT CAN SAFELY AND EFFICIENTLY BE USED FOR SEEDBED PREPARATION AND SEEDING.
INSTALL NECESSARY SEDIMENT CONTROL PRACTICES BEFORE SEEDBED PREPARATION AND COMPLETE GRADING ACCORDING TO THE APPROVED PLAN.
PREPARE A FRIABLE SEEDBED WITH TILLAGE TO A DEPTH OF AT LEAST 6"±. BREAK UP LARGE CLODS, ALLEVIATE COMPACTION, AND SMOOTH AND FIRM THE SOIL INTO A UNIFORM SURFACE. FILL IN OR LEVEL DEPRESSIONS THAT CAN COLLECT WATER.

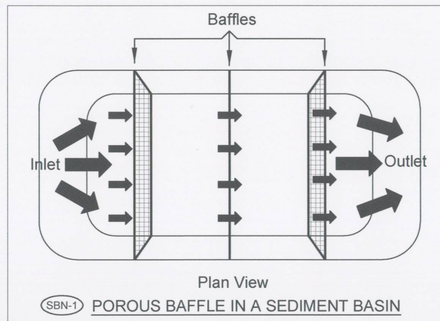
PLANTING METHODS
SEEDING
USE CERTIFIED SEED FOR PERMANENT SEEDING WHENEVER POSSIBLE. CERTIFIED SEED IS INSPECTED BY THE ALABAMA CROP IMPROVEMENT ASSOCIATION TO MEET HIGH QUALITY STANDARDS AND WILL BE TAGGED WITH A "CERTIFIED SEED"± TAG. (NOTE: ALL SEED SOLD IN ALABAMA IS REQUIRED BY LAW TO BE TAGGED TO IDENTIFY SEED PURITY, GERMINATION, AND PRESENCE OF WEED SEEDS. SEED MUST MEET STATE STANDARDS FOR CONTENT OF NOXIOUS WEEDS.)
SEEDING DATES ARE DETERMINED USING FIGURE PS-1 AND TABLE PS-1
INOCULATE LEGUME SEED WITH THE RHIZOBIUM BACTERIA APPROPRIATE TO THE SPECIES OF LEGUME. DETAILS OF LEGUME INOCULATION ARE LOCATED IN CHAPTER 2 IN THE PART ON VEGETATION FOR EROSION AND SEDIMENT CONTROL UNDER INOCULATION OF LEGUMES.
PLANT SEED UNIFORMLY WITH A CYCLONE SEEDER, A DRILL SEEDER, A CULTIPACKER SEEDER, OR BY HAND ON A FRESH, FIRM, FRIABLE SEEDBED. IF THE SEEDBED HAS BEEN SEALED BY RAINFALL, IT SHOULD BE DISKED SO THE SEED WILL BE SOWN INTO A FRESHLY PREPARED SEEDBED.
WHEN USING BROADCAST-SEEDING METHODS, SUBDIVIDE THE AREA INTO WORKABLE SECTIONS AND DETERMINE THE AMOUNT OF SEED NEEDED FOR EACH SECTION. APPLY ONE-HALF THE SEED WHILE MOVING BACK AND FORTH ACROSS THE AREA, MAKING A UNIFORM PATTERN. THEN APPLY THE SECOND HALF IN THE SAME WAY, BUT MOVING AT RIGHT ANGLES TO THE FIRST PASS. COVER BROADCAST SEED BY RAKING OR CHAIN DRAGGING. THEN FIRM THE SURFACE WITH A ROLLER OR CULTIPACKER TO PROVIDE GOOD SEED CONTACT. SMALL GRAINS SHOULD BE PLANTED NO MORE THAN 1"± DEEP AND GRASSES AND LEGUME SEED NO MORE THAN ½0"± DEEP.
HYDROSEEDING
SURFACE ROUGHENING IS PARTICULARLY IMPORTANT WHEN HYDROSEEDING, AS A ROUGHENED SLOPE WILL PROVIDE SOME NATURAL COVERAGE FOR LIME, FERTILIZER, AND SEED. THE SURFACE SHOULD NOT BE COMPACTED OR SMOOTH. FINE SEEDBED PREPARATION IS NOT NECESSARY FOR HYDROSEEDING OPERATIONS, LARGE CLODS, STONES, AND IRREGULARITIES PROVIDE CAVITIES IN WHICH SEEDS CAN LODGE.
MIX SEED, INOCULANT IF REQUIRED, AND A SEED CARRIER WITH WATER AND APPLY AS A SLURRY UNIFORMLY OVER THE AREA TO BE TREATED. THE SEED CARRIER SHOULD BE A CELLULOSE FIBER, NATURAL WOOD FIBER OR OTHER APPROVED FIBER MULCH MATERIAL WHICH IS DYED AN APPROPRIATE COLOR TO FACILITATE UNIFORM APPLICATION OF SEED. USE THE CORRECT LEGUME INOCULANT AT 4 TIMES THE RECOMMENDED RATE WHEN ADDING INOCULANT TO A HYDROSEEDER SLURRY. THE MIXTURE SHOULD BE APPLIED WITHIN ONE HOUR AFTER MIXING TO REDUCE DAMAGE TO SEED.
FERTILIZER SHOULD NOT BE MIXED WITH THE SEED-INOCULANT MIXTURE BECAUSE FERTILIZER SALTS MAY DAMAGE SEED AND REDUCE GERMINATION AND SEEDLING VIGOR.
FERTILIZER MAY BE APPLIED WITH A HYDROSEEDER AS A SEPARATE OPERATION AFTER SEEDLINGS ARE ESTABLISHED.
LIME IS NOT NORMALLY APPLIED WITH A HYDRAULIC SEEDER BECAUSE IT IS ABRASIVE BUT IF NECESSARY IT CAN BE ADDED TO THE SEED SLURRY AND APPLIED AT SEEDING OR IT MAY BE APPLIED WITH THE FERTILIZER MIXTURE. ALSO LIME CAN BE BLOWN ONTO STEEPER SLOPES IN DRY FORM.
SPRIGGING
HYBRID BERMUDAGRASS CANNOT BE GROWN FROM SEED AND MUST BE PLANTED VEGETATIVELY. VEGETATIVE METHODS OF ESTABLISHING COMMON AND HYBRID BERMUDAGRASS, CENTIPEDEGRASS AND ZOYSIA INCLUDE SODDING, PLUGGING AND SPRIGGING (SEE SODDING PRACTICE).
WHEN SPRIGS ARE PLANTED WITH A SPRIGGING MACHINE, FURROWS SHOULD BE 4-6"± DEEP AND 2 FEET APART. PLACE SPRIGS NO FARTHER THAN 2 FEET APART IN THE ROW AND SO THAT AT LEAST ONE ROOTING NODE IS IN THE FURROW.
WHEN BROADCASTING IS USED FOR SPRIG PLANTING, BROADCAST SPRIGS AT THE SPECIFIED RATE (TABLE PS-1). PRESS INTO THE TOP ½0"± TO 2"± OF SOIL WITH A CULTIPACKER OR WITH A DISK SET NEARLY STRAIGHT SO THAT THE SPRIGS ARE NOT BROUGHT BACK TO THE SURFACE. A MULCH TACKING MACHINE MAY BE USED TO PRESS SPRIGS INTO THE SOIL.

MULCHING
THE USE OF MULCH PROVIDES INSTANT COVER AND HELPS ENSURE ESTABLISHMENT OF VEGETATION UNDER NORMAL CONDITIONS AND IS ESSENTIAL TO SEEDING SUCCESS UNDER HARSH SITE CONDITIONS (SEE MULCHING PRACTICE). HARSH SITE CONDITIONS INCLUDE: SLOPES STEEPER THAN 3:1 AND ADVERSE SOILS (SHALLOW, ROCKY, OR HIGH IN CLAY OR SAND). AREAS WITH CONCENTRATED FLOW SHOULD BE TREATED DIFFERENTLY AND REQUIRE SOD, A HYDROMULCH FORMULATED FOR CHANNELS OR AN APPROPRIATE EROSION CONTROL BLANKET.

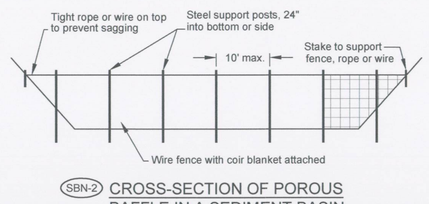
IRRIGATION
MOISTURE IS ESSENTIAL FOR SEED GERMINATION AND VEGETATION ESTABLISHMENT. SUPPLEMENTAL IRRIGATION CAN BE VERY HELPFUL IN ASSURING ADEQUATE STANDS IN DRY SEASONS OR TO SPEED DEVELOPMENT OF FULL COVER. IT IS A REQUIREMENT FOR ESTABLISHMENT OF VEGETATION FROM SOD AND SPRIGS AND SHOULD BE USED ELSEWHERE WHEN FEASIBLE. HOWEVER, IRRIGATION IS RARELY CRITICAL FOR LOW-MAINTENANCE VEGETATION PLANTED AT THE APPROPRIATE TIME OF THE YEAR. WATER APPLICATION RATES MUST BE CAREFULLY CONTROLLED TO PREVENT RUNOFF. INADEQUATE OR EXCESSIVE AMOUNTS OF WATER CAN BE MORE HARMFUL THAN NO SUPPLEMENTAL WATER.

MAINTENANCE
GENERALLY, A STAND OF VEGETATION CANNOT BE DETERMINED TO BE FULLY ESTABLISHED UNTIL SOIL COVER HAS BEEN MAINTAINED FOR 1 FULL YEAR FROM PLANTING. INSPECT VEGETATED AREAS FOR FAILURE AND MAKE NECESSARY REPAIRS AND VEGETATE AS SOON AS POSSIBLE.
IF A STAND HAS INADEQUATE COVER, REEVALUATE CHOICE OF PLANT MATERIALS AND QUANTITIES OF LIME AND FERTILIZER. RE-ESTABLISH THE STAND AFTER SEEDBED PREPARATION OR OVER-SEED THE STAND. CONSIDER A TEMPORARY SEEDING IF THE TIME OF YEAR IS NOT APPROPRIATE FOR ESTABLISHMENT OF PERMANENT VEGETATION (SEE TEMPORARY SEEDING PRACTICE).
IF VEGETATION FAILS TO GROW, A SOIL TEST SHOULD BE MADE TO DETERMINE IF SOIL ACIDITY OR NUTRIENT IMBALANCE IS RESPONSIBLE.
TO ATTAIN COMPLETE ESTABLISHMENT, FERTILIZATION IS USUALLY REQUIRED IN THE SECOND GROWING SEASON. TURF GRASSES REQUIRE ANNUAL MAINTENANCE FERTILIZATION. USE SOIL TESTS IF POSSIBLE OR FOLLOW THE GUIDELINES GIVEN FOR THE SPECIFIC SEEDING MIXTURES.
PROTECT VEGETATION DURING ITS ESTABLISHING PERIOD FROM TRAFFIC THAT WILL BE HARMFUL. IF APPROPRIATE, USE EITHER TEMPORARY FENCES OR BARRIERS TO PROTECT AREAS THAT MAY BE DAMAGED BY EXCESSIVE TRAFFIC.

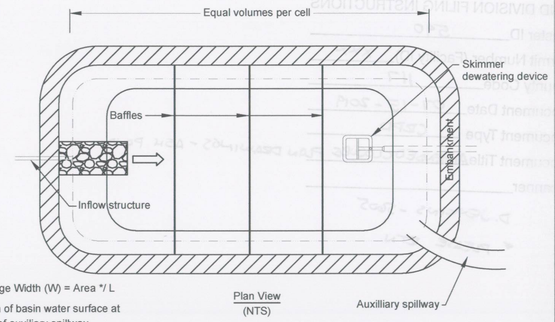
PS PERMANENT SEEDING

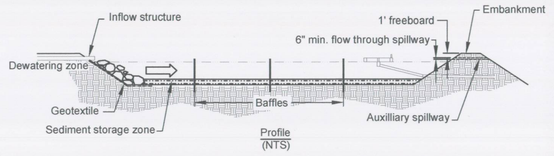


SBN-1 POROUS BAFFLE IN A SEDIMENT BASIN



SBN-2 CROSS-SECTION OF POROUS BAFFLE IN A SEDIMENT BASIN





SBN-5 SEDIMENT BASIN WITH SKIMMER OUTLET AND EMERGENCY SPILLWAY

DESIGN CRITERIA

Summary:	Temporary Sediment Trap
Emergency Spillway:	Trapezoidal spillway with non-erosive lining. 10 – year, 24 – hour rainfall event
Recommended Minimum Drainage Area	10 acres
Minimum Volume	3,600 cubic feet per acre of drainage area
Minimum L/W Ratio:	2:1
Minimum Depth:	2 feet
Dewatering Mechanism:	Skimmer(s) or other approved basin dewatering device
Dewatering Time:	2 – 5 days
Baffles Required:	3

COMPLIANCE WITH LAWS AND REGULATIONS
DESIGN AND CONSTRUCTION SHOULD COMPLY WITH STATE AND LOCAL LAWS, ORDINANCES, RULES AND REGULATIONS.

DESIGN BASIN LIFE
STRUCTURES INTENDED FOR MORE THAN 3 YEARS OF USE SHOULD BE DESIGNED AS PERMANENT STRUCTURES. PROCEDURES OUTLINED IN THIS SECTION DO NOT APPLY TO PERMANENT STRUCTURES.

DAM HEIGHT
IN ORDER TO ENSURE PUBLIC SAFETY, THE MAXIMUM DAM HEIGHT SHOULD BE 10 FEET, MEASURED FROM THE DESIGNED (SETTLED) TOP ELEVATION OF THE DAM TO THE LOWEST POINT AT THE DOWNSTREAM TOE.

DRAINAGE AREA
IN ORDER TO MINIMIZE RISK TO THE PUBLIC AND ENVIRONMENT, THE MAXIMUM DRAINAGEAREA FOR EACH SEDIMENT BASIN SHOULD BE MINIMIZED. THE RECOMMENDED MAXIMUMDRAINAGE AREA IS 10 ACRES. THE ABSOLUTE MAXIMUM DRAINAGE AREA SHOULD BE 100ACRES.

BASIN LOCATIONS
SELECT AREAS THAT:

- ARE NOT INTERMITTENT OR PERENNIAL STREAMS
- ALLOW A MAXIMUM AMOUNT OF CONSTRUCTION RUNOFF TO BE BROUGHT INTO THE STRUCTURE.
- PROVIDE CAPACITY FOR STORAGE OF SEDIMENT FROM AS MUCH OF THE PLANNED DISTURBED AREA AS PRACTICAL
- EXCLUDE RUNOFF FROM UNDISTURBED AREAS WHERE PRACTICAL
- PROVIDE ACCESS FOR SEDIMENT REMOVAL THROUGHOUT THE LIFE OF THE PROJECT
- INTERFERE MINIMALLY WITH CONSTRUCTION ACTIVITIES

BASIN SHAPE
ENSURE THAT THE FLOW LENGTH TO BASIN WIDTH RATIO IS 2:1 OR LARGER TO IMPROVE TRAPPING EFFICIENCY. LENGTH IS MEASURED AT THE ELEVATION ASSOCIATED WITH THE MINIMUM STORAGE VOLUME. GENERALLY, THE BOTTOM OF THE BASIN SHOULD BE LEVEL TO ENSURE THE BAFFLES FUNCTION PROPERLY. THE AREA BETWEEN THE INLET AND FIRST BAFFLE CAN BE DESIGNED WITH REVERSE GRADE TO IMPROVE THE TRAPPING EFFICIENCY.
RESEARCH HAS SHOWN THAT THE SURFACE AREA OF THE BASIN SHOULD BE MAXIMIZED TO IMPROVE TRAPPING EFFICIENCY. RESULTS OF TESTS SHOW THAT A SURFACE AREA OF 435 SQ. FT. PER CFS (PEAK DISCHARGE FOR THE 10-YEAR, 24-HOUR EVENT), IS NEEDED FOR EFFECTIVE TRAPPING EFFICIENCY.

STORAGE VOLUME
ENSURE THAT THE SEDIMENT STORAGE VOLUME OF THE BASIN IS AT LEAST 3,600 CUBIC FEET PER ACRE FOR THE AREA DRAINING INTO THE BASIN. VOLUME IS MEASURED BELOW THE EMERGENCY SPILLWAY CREST. REMOVE SEDIMENT FROM THE BASIN WHEN APPROXIMATELY ONE-HALF OF THE STORAGE VOLUME HAS BEEN FILLED.

BAFFLES
SPACE THE BAFFLES TO CREATE EQUAL ZONES OF VOLUME WITHIN THE BASIN.
THE TOP OF THE BAFFLE SHOULD BE THE SAME ELEVATION AS THE MAXIMUM WATER DEPTH FLOWING THROUGH THE EMERGENCY SPILLWAY. BAFFLES ARE MOST EFFECTIVE AT A HEIGHT OF 3 FEET; HOWEVER, SITE CONDITIONS MAY WARRANT TALLER BAFFLES.
BAFFLES SHOULD BE DESIGNED TO GO UP THE SIDES OF THE BASIN BANKS SO WATER DOES NOT FLOW AROUND THE BAFFLES. MOST OF THE SEDIMENT WILL BE CAPTURED IN THE INLET ZONE. SMALLER PARTICLE SIZE SEDIMENTS ARE CAPTURED IN THE LATTER CELLS.
THE DESIGN LIFE OF THE FABRIC CAN BE UP TO 3 YEARS, BUT MAY NEED TO BE REPLACED MORE OFTEN IF DAMAGED OR CLOGGED.

SPILLWAY CAPACITY
THE EMERGENCY SPILLWAY SYSTEM MUST CARRY THE PEAK RUNOFF FROM THE 10-YEAR 24-HOUR STORM WITH A MINIMUM 1 FOOT OF FREEBOARD (DISTANCE BETWEEN THE SURFACE OF THE WATER WITH THE SPILLWAY FLOWING FULL AND THE TOP OF THE EMBANKMENT). BASE RUNOFF COMPUTATIONS ON THE MOST SEVERE SOIL COVER CONDITIONS EXPECTED IN THE DRAINAGE AREA DURING THE EFFECTIVE LIFE OF THE STRUCTURE.

SEDIMENT CLEANOUT ELEVATION
DETERMINE THE ELEVATION AT WHICH THE INVERT OF THE BASIN WOULD BE HALF-FULL. THIS ELEVATION SHOULD ALSO BE MARKED IN THE FIELD WITH A PERMANENT STAKE SET AT THIS GROUND ELEVATION (NOT THE TOP OF THE STAKE).

BASIN DEWATERING
THE BASIN SHOULD BE PROVIDED WITH A SURFACE OUTLET. A FLOATING SKIMMER SHOULD BE ATTACHED TO A SCHEDULE 40 PVC BARREL PIPE OF THE SAME DIAMETER AS THE SKIMMER ARM.THE SKIMMER APPARATUS WILL CONTROL THE RATE OF DEWATERING. THE SKIMMER SHOULD BE SIZED TO DEWATER THE BASIN IN 48-120 HOURS (2-5 DAYS). THE BARREL PIPE SHOULD BE LOCATED UNDER THE EMBANKMENT WITH AT LEAST ONE ANTI-SEEP COLLAR AT THE CENTER OF THE EMBANKMENT PROJECTING A MINIMUM OF 1.5 FT IN ALL DIRECTIONS FROM THE A DRAINAGE DIAPHRAGM CAN BE USED IN LIEU OF AN ANTI-SEEP COLLAR. THE BARREL PIPE OUTLET MUST BE STABLE AND NOT CAUSE EROSION.

SBN-5 SEDIMENT BASIN WITH SKIMMER OUTLET AND EMERGENCY SPILLWAY

DESIGN CRITERIA
PLANT SELECTION
SELECT PLANTS THAT CAN BE EXPECTED TO MEET PLANTING OBJECTIVES. TO SIMPLIFY PLANT SELECTION, USE FIGURE PS-1 GEOGRAPHICAL AREAS FOR SPECIES ADAPTATION AND SEEDING DATES AND TABLE PS-1, COMMONLY USED PLANTS FOR PERMANENT COVER. MIXTURES COMMONLY SPECIFIED BY THE ALABAMA DEPARTMENT OF TRANSPORTATION ARE AN APPROPRIATE ALTERNATIVE FOR PLANTINGS ON RIGHTS-OF-WAYS. ADDITIONAL INFORMATION RELATED TO PLANTS COMMONLY USED IN ALABAMA IS FOUND IN CHAPTER 2 UNDER THE SECTION VEGETATION FOR EROSION AND SEDIMENT CONTROL.

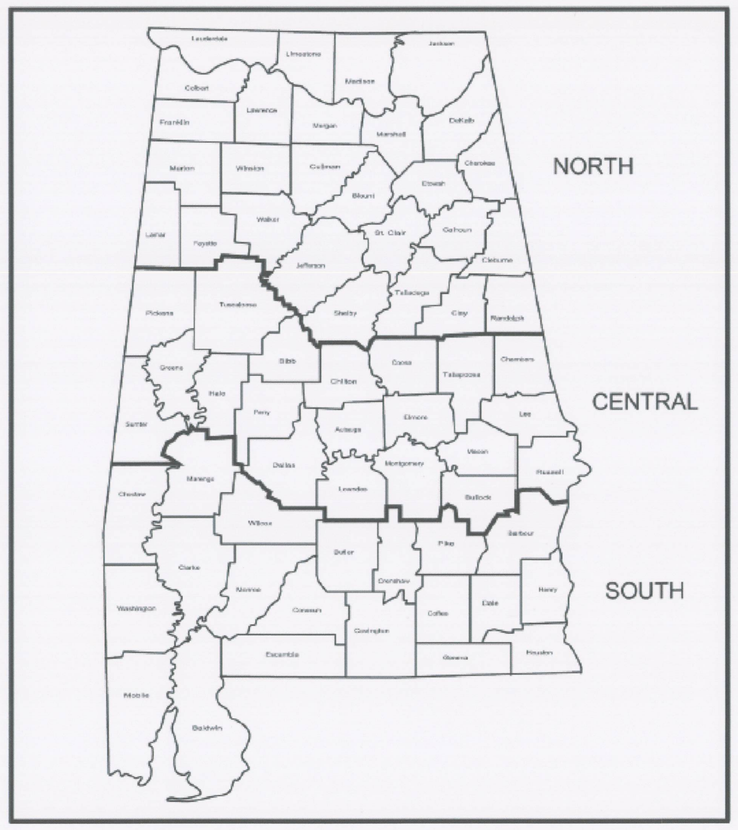


FIGURE TS-1 GEOGRAPHICAL AREAS FOR SPECIES ADAPTATION AND SEEDING DATES

NOTES: SITE CONDITIONS RELATED TO SOILS AND ASPECT IN COUNTIES ADJACENT TO OR CLOSE TO COUNTY BOUDARIES MAY JUSTIFY ADJUSTMENTS IN PLANTING DATES BY QUALIFIED DESIGN PROFESSIONALS.

Table TS-I Commonly Used Plants for Temporary Cover

Species	Seeding Rate/AC PLS	North	Central	South
		Seeding Dates		
Millet, Browntop or German	40 lbs	Apr1-Aug 1	Apr1- Aug 15	Apr 1-Aug 15
Rye	3 bu	Sep1-Nov 15	Sep 15-Nov 15	Sep 15-Nov 15
Ryegrass	30 lbs	Aug1-Sep 15	Sep1-Oct 15	Sep 1-Oct 15
Sorghum-Sudan Hybrids	40 lbs	May1-Aug 1	Apr 15-Aug 1	Apr1-Aug 15
Sudangrass	40 lbs	May1-Aug 1	Apr 15-Aug	Apr1-Aug 15
Wheat	3 bu	Sep1-Nov 1	Sep 15-Nov 15	Sep 15-Nov 15
Common Bermudagrass	10 lbs	Apr 1-July 1	Mar 15-July 15	Mar 1-July 15
Crimson Clover	10lbs	Sept 1-Nov 1	Sept 1-Nov 1	Sept 1-Nov 1

PLS means pure live seed and is used to adjust seeding rates. For example, to plant 10 lbs PLS of a species with germination of 80% and purity of 90%, PLS= 0.8X 0.9 = 72%. 10 lbs PLS = 10/0.72 = 13.9 lbs of the species to be planted.

SITE PREPARATION AND SOIL AMENDMENTS
COMPLETE GRADING AND SHAPING BEFORE APPLYING SOIL AMENDMENTS IF NEEDED TO PROVIDE A SURFACE ON WHICH EQUIPMENT CAN SAFELY AND EFFICIENTLY BE USED TO APPLY SOIL AMENDMENTS AND ACCOMPLISH SEEDBED PREPARATION AND SEEDING.
LIME
APPLY LIME ACCORDING TO SOIL TEST RECOMMENDATIONS. IF A SOIL TEST IS NOT AVAILABLE, USE 1 TON OF AGRICULTURAL LIMESTONE OR EQUIVALENT PER ACRE ON COARSE TEXTURED SOILS AND 2 TONS PER ACRE ON FINE TEXTURED SOILS. DO NOT APPLY LIME TO ALKALINE SOILS OR TO AREAS WHICH HAVE BEEN LIMED DURING THE PRECEDING 2 YEARS. OTHER LIMING MATERIALS THAT MAY BE SELECTED SHOULD BE PROVIDED IN AMOUNTS THAT PROVIDE EQUAL VALUE TO THE CRITERIA LISTED FOR AGRICULTURAL LIME OR BE USED IN COMBINATION WITH AGRICULTURAL LIMESTONE OR SELMA CHALK TO PROVIDE EQUIVALENT VALUES TO AGRICULTURAL LIMESTONE
FERTILIZER
APPLY FERTILIZER ACCORDING TO SOIL TEST RESULTS. IF A SOIL TEST IS NOT AVAILABLE, APPLY 8-24-24 FERTILIZER.
WHEN VEGETATION HAS EMERGED TO A STAND AND IS GROWING, 30 TO 40 LBS/ACRE (APPROXIMATELY 0.8 LBS/1000 FT2) OF ADDITIONAL NITROGEN FERTILIZER SHOULD BE APPLIED.
NOTE: FERTILIZER CAN BE BLENDED TO MEET EXACT FERTILIZER RECOMMENDATIONS. TAKE SOIL TEST RECOMMENDATIONS TO LOCAL FERTILIZER DEALER FOR BULK FERTILIZER BLENDS. THIS MAY BE MORE ECONOMICAL THAN BAGGED FERTILIZER.

APPLICATION OF SOIL AMENDMENTS
INCORPORATE LIME AND FERTILIZER INTO THE TOP 6" OF SOIL DURING SEEDBED PREPARATION.
SEEDBED PREPARATION
GOOD SEEDBED PREPARATION IS ESSENTIAL TO SUCCESSFUL PLANT ESTABLISHMENT. A GOOD SEEDBED IS WELL PULVERIZED, LOOSE, AND SMOOTH. IF SOILS BECOME COMPACTED DURING GRADING, LOOSEN THEM TO A DEPTH OF 6" TO 8" USING A RIPPER OR CHISEL PLOW.
IF RAINFALL HAS CAUSED THE SURFACE TO BECOME SEALED OR CRUSTED, LOOSEN IT JUST PRIOR TO SEEDING BY DISKING, RAKING, HARROWING, OR OTHER SUITABLE METHODS. WHEN HYDROSEEDING METHODS ARE USED, THE SURFACE SHOULD BE LEFT WITH A MORE IRREGULAR SURFACE OF CLODS.

PLANTING METHODS
SEEDING
EVENLY APPLY SEED USING A CYCLONE SEEDER (BROADCAST), DRILL SEEDER, CULTIPACKER SEEDER, OR HYDROSEEDER. BROADCAST SEEDING AND HYDROSEEDING ARE APPROPRIATE FOR STEEP SLOPES WHERE EQUIPMENT CANNOT OPERATE SAFELY. SMALL GRAINS SHOULD BE PLANTED NO MORE THAN 1" DEEP, AND GRASSES AND LEGUMES NO MORE THAN ½" DEEP. SEED THAT ARE BROADCAST MUST BE COVERED BY RAKING OR CHAIN DRAGGING, AND THEN LIGHTLY FIRMED WITH A ROLLER OR CULTIPACKER.
HYDROSEEDING
SURFACE ROUGHENING IS PARTICULARLY IMPORTANT WHEN HYDROSEEDING, AS A ROUGHENED SLOPE WILL PROVIDE SOME NATURAL COVERAGE FOR LIME, FERTILIZER, AND SEED. THE SURFACE SHOULD NOT BE COMPACTED OR SMOOTH. FINE SEEDBED PREPARATION IS NOT NECESSARY FOR HYDROSEEDING OPERATIONS; LARGE CLODS, STONES, AND IRREGULARITIES PROVIDE CAVITIES IN WHICH SEEDS CAN LODGE.
MIX SEED, INOCULANT IF REQUIRED, AND A SEED CARRIER WITH WATER AND APPLY AS SLURRY UNIFORMLY OVER THE AREA TO BE TREATED. THE SEED CARRIER SHOULD BE A CELLULOSE FIBER, NATURAL WOOD FIBER OR OTHER APPROVED FIBER MULCH MATERIAL WHICH IS DYED AN APPROPRIATE COLOR TO