PLANT McDONOUGH-ATKINSON
CCR SURFACE IMPOUNDMENTS
(CCR UNIT AP-2, COMBINED CCR UNIT AP-3/4)
COBB COUNTY, GEORGIA
PART A SECTION 6 – GROUNDWATER MONITORING PLAN

FOR

Georgia Power

Revision 01 – November 2020

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GOLDER

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CERTIFICATION

This Groundwater Monitoring Plan for Georgia Power Company's (Georgia Power) Ash Pond 2 (AP-2), and Combined Unit AP-3/4 (previously Ash Pond 3 [AP-3] and Ash Pond 4 [AP-4]), located at Plant McDonough-Atkinson (Plant McDonough) was prepared by Golder Associates Inc. (Golder). References to the appropriate 391-3-4 Rules are incorporated throughout this document.

I certify that I am a qualified groundwater scientist as defined in 391-3-4-.01(57) who is a professional engineer or geologist registered to practice in Georgia who has received a baccalaureate or post-graduate degree in the natural sciences or engineering and has sufficient training and experience in groundwater hydrology and related fields that enable me to make sound professional judgments regarding groundwater monitoring, contaminant fate and transport, and corrective action. I further certify that this Groundwater Monitoring Plan was prepared by myself or by a subordinate working under my direction. The design of the groundwater monitoring system was developed in compliance with Georgia Environmental Protection Division (EPD) Rules of Solid Waste Management, Chapter 391-3-4-.10(6).

Golder Associates Inc.

11/17/2020

Timothy I. Richards, PG
Georgia Registered Professional Geologist No. 2240

Date

1.0 INTRODUCTION

Groundwater monitoring is required by the Georgia Environmental Protection Division (EPD) to detect and quantify potential changes in groundwater chemistry. This Groundwater Monitoring Plan (plan) describes the groundwater monitoring program for the site. This plan meets the requirements of EPD rules and uses EPD's Manual for Ground Water Monitoring dated September 1991 as a guide. Monitoring well and piezometer locations are presented on Figures A1 and A2 in Appendix A for Ash Pond Unit 2 (AP-2) and Combined Ash Pond Unit 3 and 4 (AP-3/4) at Plant McDonough.

Monitoring will occur in accordance with 391-3-4-.10 of the Georgia Solid Waste Management Rules. If the monitoring requirements specified in this plan conflict with EPD rules (391-3-4), the EPD rules will take precedent.

Pursuant to 391-3-4.10(6)(d)3, Georgia Power Company (Georgia Power) will seek EPD concurrence with groundwater monitoring well installation and decommissioning. As required by 391-3-4.10(6)(g), a minor modification will be submitted to the EPD prior to the installation or decommissioning of monitoring wells. Well installation and decommissioning must be directed by a qualified groundwater scientist.

2.0 GEOLOGIC AND HYDROGEOLOGIC CONDITIONS

Geologic conditions for this site are described in detail in a report prepared by Southern Company Services (SCS) entitled *Site Acceptability Report* dated December 2007 as well as the Hydrogeological Assessment Report (HAR) prepared by Golder Associates Inc. (Golder), submitted as part of this Design and Operations plan set. Key elements of Golder's HAR are summarized below.

2.1 Site Geology

The Piedmont/Blue Ridge geologic province contains some of the oldest rock formations in the southeastern United States. These late Precambrian to late Paleozoic rocks have undergone repeated cycles of igneous intrusions and extrusions, metamorphism, folding, faulting, shearing, and silicification. Rock outcrops near the site consist of biotite gneiss, porphyritic gneiss, mica schist, and quartzite.

Based on review of site data, residual soils, primarily clayey/sandy silt, sandy silt with clay, and silty sand, occur as a variably thick blanket overlying bedrock across most of the site. Saprolitic soils and/or saprolitic rock range in thickness across the site but are generally encountered at or near ground surface. Saprolitic rock is also considered to be transitionally weathered rock (TWR) or partially weathered rock (PWR). PWR is defined by Standard Penetration Test (SPT) blow counts that exceed 50 blows/foot. Material overlying the top of rock surface, including residual soils, saprolite, and TWR or PWR, is collectively referred to as overburden.

Bedrock beneath the overburden north of the faulted intrusive contact is primarily characterized by Ordovician-age felsic sphene-epidote-biotite-quartz-feldspar gneiss (OZli) with well-developed foliation and an augen texture reflecting historical movement/deformation near fault and shear zones of the inactive Brevard fault zone. Bedrock beneath the overburden south of the faulted intrusive contact is primarily characterized by interlayered Ordovician age phyllonite, button schist with well-developed shear foliation, fine-grained mylonite with poorly developed foliation, and very fine-grained mylonitic biotite gneiss with well-developed shear foliation (OZbs). The contact has had substantial movement as indicated by porphyroclastic-feldspars with sigmoidal-tails.

2.2 Site Hydrogeology

A regional, unconfined aquifer system is present at the Site, consisting of regolith, TWR, and shallow bedrock. A bedrock aquifer system also occurs beneath the site, consisting of deeper bedrock that is not well developed or interconnected with the unconfined aquifer system. Preferential groundwater flow is anticipated along lineaments and discontinuities. The regolith is variably comprised of porous and permeable alluvial, residual, and colluvial soils and saprolite, grading downward into a variably weathered, less permeable zone that overlies a less weathered and more permeable transitional weathering zone (Heath, 1984). This unconfined, surficial aquifer system is recharged primarily through precipitation and subsequent infiltration, and flow is generally controlled by topography and surface water drainage and occurs mainly through intergranular pore spaces. Porosity generally ranges from about 20 to 30% and hydraulic conductivity ranges from 1 to 10-feet per day (ft/day). Groundwater is stored in pore spaces in the regolith and then percolates downward to the weathered zone between soil and bedrock and into interconnected bedrock discontinuities. The saturated soils in the regolith function as the principal storage reservoir for groundwater in the bedrock.

Groundwater occurs in a fracture network that is largely dependent on rock type, degree of differential weathering, topography, and area of catchment. Groundwater flow in the underlying bedrock occurs primarily along discontinuities such as compositional layering, foliation, joints, and fractures. Fracture porosity is minimum compared to the regolith, and thus, groundwater flow is determined by how well the fractures are inter-connected.

At the site, the water table aquifer and the upper bedrock aquifer together constitute an unconfined system. Limited groundwater level data indicate a high of 836-feet above mean sea level near the northern area and about 732-feet above mean sea level near the Chattahoochee River. Groundwater flows toward the onsite streams and the Chattahoochee River.

2.3 Uppermost Aquifer

The uppermost aquifer occurs within the overburden and upper bedrock at the site. Although the degree of connection between the overburden and underlying bedrock aquifer systems is not well known, the bedrock is generally massive with few joints available to receive groundwater from the overlying overburden. Consequently, groundwater flow within the uppermost aquifer is anticipated to occur primarily along the transitionally weathered rock zone, which is located at the interface between the overburden residual soils and massive bedrock, and upper bedrock.

Groundwater in the uppermost aquifer appears to be supporting base flow of creeks onsite (many groundwater contours cross topographic contours of similar elevation at headwaters of creek). A vertically upward hydraulic gradient appears to exist based on water level measurement data adjacent to the unnamed creek. However, generally across the site vertical gradients are assumed to be downward in topographically higher areas and upwards closer to the Chattahoochee River. Recharge to the uppermost aquifer is primarily through precipitation. Groundwater discharge appears to occur within tributary creeks onsite, the ponds, and ultimately into the Chattahoochee River. The potentiometric surface for the uppermost aquifer is generally southeast to south towards the Chattahoochee river.

3.0 SELECTION OF WELL LOCATIONS

Groundwater monitoring wells are installed to monitor the uppermost aquifer beneath the site. Locations are selected based on final ash pond closure footprint and site geologic and hydrogeologic considerations. Locations

are chosen to serve as upgradient (DGWA), lateral, or downgradient (DGWC) based on groundwater flow direction determined by potentiometric evaluation. As flow conditions change after pumping ceases, well designations will continue to be evaluated during each semi-annual event.

Monitoring wells will generally be located outside of areas with frequent auto traffic; however, wells may be installed in heavily trafficked areas when necessary to meet the groundwater monitoring objectives of the EPD rules.

A map depicting monitoring well locations for monitoring AP-2 and AP-3/4 is included in Appendix A, Monitoring System Details. Appendix A also includes a tabulated list of individual monitoring wells with well construction details such as location coordinates, top-of-casing elevation, well depths and screened intervals. A modification that involves the addition of or a change to the groundwater monitoring network must be made by a minor modification to the permit pursuant to 391-3-4-.02(3)(b)6.

4.0 MONITORING WELL DRILLING, CONSTRUCTION, ABANDONMENT & REPORTING

The existing monitoring well network for AP-2 and AP-3/4 is currently in place. Existing monitoring wells were installed following Region 4 U.S. Environmental Protection Agency (EPA) Science and Ecosystem Support Division (SESD) *Operating Procedure for Design and Installation of Monitoring Wells* as a general guide for best practices. The monitoring wells and piezometers were surveyed by Metro Engineering & Surveying Co., Inc, with a horizontal accuracy of 0.5 feet and a vertical accuracy of 0.01 feet referenced to Georgia State Plane Coordinate System (Georgia State Plane, West Zone, NAD83) and vertical datum North American Vertical Datum 1988 (NAVD88). The certified surveyor's report is included in Appendix A. Monitoring well logs for the existing monitoring well network, are included in Appendix A.

4.1 Drilling

A variety of well drilling methods are available for installing groundwater wells. Drilling methodology may include, but not be limited to: hollow stem augers, direct push, air rotary, mud rotary, or rotosonic techniques. The drilling method shall minimize the disturbance of subsurface materials and shall not cause impact to the groundwater. Borings will be advanced using an appropriate drilling technology capable of drilling and installing a well in site-specific geology. Drilling equipment shall be decontaminated before use and between borehole locations using the procedures described in the latest version of the Region 4 U.S. EPA SESD *Operating Procedure for Field Equipment Cleaning and Decontamination* as a guide.

Sampling and/or coring may be used to help determine the stratigraphy and geology. Samples will be logged under the oversight of a qualified groundwater scientist. Screen depths will be chosen based on the depth of the uppermost aquifer.

Drilling for any subsurface hydrologic investigation, installation, or abandonment of groundwater wells at a landfill in Georgia must be performed by a driller that has, at the time of installation, a performance bond on file with the Water Well Standards Advisory Council.

Monitoring wells will be installed using the latest version of the Region 4 U.S. EPA SESD *Operating Procedure for Design and Installation of Monitoring Wells* as a general guide for best practices. Drilling and well installation activities will be directed by a qualified groundwater scientist.

4.2 Design and Construction

Well construction materials will be sufficiently durable to resist chemical and physical degradation and will not interfere with the quality of groundwater samples.

4.2.1 Well Casings and Screens

American Society for Testing and Materials (ASTM), National Sanitation Foundation (NSF) rated, Schedule 40, 2-inch polyvinyl chloride (PVC) pipe with flush threaded connections will be used for the well riser and screens. Compounds that can cause PVC to deteriorate (e.g., organic compounds) are not expected at this facility. If conditions warrant, other appropriate materials may be used for construction with prior written approval from the EPD.

4.2.2 Well Intake Design

The design and construction of the intake of the groundwater wells shall: (1) allow sufficient groundwater flow to the well for sampling; (2) minimize the passage of formation materials (turbidity) into the well; and (3) ensure sufficient structural integrity to prevent the collapse of the intake structure.

Each groundwater monitoring well will include a well screen designed to limit the amount of formation material passing into the well when it is purged and sampled. Screens with 0.010-inch slots have proven effective for the earth materials at the site and will be used unless geologic conditions discovered at the time of installation dictate a different size. Screen length shall not exceed 10 feet without justification as to why a longer screen is necessary (e.g., significant variation in groundwater level). If the above techniques prove ineffective for developing a well with sufficient yield or acceptable turbidity, further steps will be taken to assure that the well screen is appropriately sized for the formation material. This may include performing sieve analysis of the formation material and determining well screen slot size based on the grain size distribution, if warranted.

Pre-packed dual-wall well screens may be used for well construction. Pre-packed well screens combine a centralized inner well screen, a developed filter sand pack, and an outer conductor screen in one integrated unit composed of inert materials. Pre-packed well screens will be installed following general industry standards and using the latest version of the Region 4 U.S. EPA SESD *Procedure for Design and Installation of Monitoring Wells* as a general guide. If the dual-wall pre-packed-screened wells do not yield sufficient water or are excessively turbid after development, further steps will be taken to assure that the well screen is appropriately sized for the formation material. This may include performing sieve analysis of the formation material and determining well screen slot size based on the grain size distribution.

4.2.3 Filter Pack and Annular Seal

The materials used to construct the filter pack will be clean quartz sand of a size that is appropriate for the screened formation. Fabric filters will not be used as filter pack material. Sufficient filter material will be placed in the hole and measurements taken to ensure that no bridging occurs. Upon placement of the filter pack, the well may be pumped to assure settlement of the pack. If pumping is performed, the top of filter pack depth will be measured, and additional sand added if necessary. The filter pack will extend approximately one to two feet above the top of the well screen.

The materials used to seal the annular space must prevent hydraulic communication between strata and prevent migration from overlying areas into the well screen interval. A minimum of two feet of bentonite (chips, pellets, or slurry) will be placed immediately above the filter pack. The bentonite seal will extend up to the base of any

overlying confining zone or the top of the water-bearing zone to prevent cementitous grout from entering the water-bearing or screened zone. If dry bentonite is used, the bentonite must be hydrated with potable water prior to grouting the remaining annulus.

The annulus above the bentonite seal will be grouted with a cement and bentonite mixture (approximately 94 pounds cement / 3 to 5 pounds bentonite / 6.5 gallons of potable water) placed via tremie pipe from the top of the bentonite seal. During grouting, care will be taken to assure that the bentonite seal is not disturbed by locating the base of the tremie pipe approximately 2 feet above the bentonite seal and injecting grout at low pressure/velocity.

4.2.4 Protective Casing and Well Completion

After allowing the grout to settle, the well will be finished by installing a flush-mount or above-ground protective casing as appropriate, and building a surface cap. The use of flush-mount wells will generally be limited to paved surfaces unless site operations warrant otherwise. The surface cap will extend from the top of the cement grout to ground surface, where it will become a concrete apron extending outward with a radius of at least 3 feet from the edge of the well casing and sloped to drain water away from the well.

Each well will be fitted with a cap that contains a hole or opening to allow the pressure in the well to equalize with atmospheric pressure. In wells with above-ground protection, the space between the well casing and the protective casing may be filled with coarse sand or pea-gravel to within approximately 6 inches of the top of the well casing. A small weep hole will be drilled at the base of the metal casing for the drainage of moisture from the casing. Above ground protective covers will be locked.

Protective bollards may be installed around each above-grade groundwater monitoring well. Well construction in high traffic areas will generally be limited unless site conditions warrant otherwise.

The groundwater monitoring well detail attached in Appendix B, Groundwater Monitoring Well Detail, illustrates the general design and construction details for a monitoring well.

4.2.5 Well Development

After well construction is completed, wells will be developed by alternately purging and surging until relatively clear discharge water with little turbidity is observed. The goal will be to achieve a turbidity of less than 10 nephelometric turbidity units (NTUs); however, formation-specific conditions may not allow this target to be accomplished. Additionally, the stabilization criteria contained in Appendix C, Groundwater Sampling Procedures, should be met. A variety of techniques may be used to develop site groundwater monitoring wells. The method used must create reversals or surges in flow to eliminate bridging by particles around the well screen. These reversals or surges can be created by using surge blocks, bailers, or pumps. The wells will be developed using a pump capable of inducing the stress necessary to achieve the development goals. Development equipment will be decontaminated prior to first use and between wells.

In low yielding wells, potable water may be added to the well to facilitate surging of the well screen interval and removal of fine-grained sediment. If water is added, the volume will be documented and at minimum, an equal volume purged from the well.

Many geologic formations contain clay and silt particles that are small enough to work their way through the wells' filter packs over time. Therefore, the turbidity of the groundwater from the monitoring wells may gradually

increase over time after initial well development. As a result, the monitoring wells may have to be redeveloped periodically to remove the silt and clay that has worked its way into the filter pack of the monitoring wells. Each monitoring well should be redeveloped when sample turbidity values have significantly increased since initial development or since prior redevelopment. The redevelopment should be performed as described above.

4.3 Well Abandonment

Monitoring wells will be abandoned using industry-accepted practices and using the *Manual For Groundwater Monitoring* (1991) and *Georgia Water Well Standards Act* (1985) as guides. The wells will be abandoned under the direction of a geologist or engineer registered in Georgia. Neat Portland cement or bentonite will be used as appropriate to complete abandonment and seal the well borehole.

Per Georgia Rule 391-3-4-.10(6)(g): Monitoring wells require abandonment and replacement after two consecutive dry sampling events, unless an alternate schedule is approved by the GA EPD. Well abandonment will be directed by a qualified groundwater scientist.

4.4 Documentation

The following information documenting the construction and development of each well is provided on the boring logs for the existing monitoring system (Appendix A). Within 60 days of the construction and development or abandonment of each groundwater monitoring well, a well installation/abandonment report will be submitted to the EPD by a qualified groundwater scientist or engineer. For installed wells, the following information will be provided:.

- Well identification
- Name of drilling contractor and type of drill rig
- Documentation stating that a Georgia-registered professional surveyor shall certify that the horizontal accuracy for the installed monitoring wells is 0.5 feet, and vertical accuracy for top of casing elevations to 0.01 feet using a known datum
- Documentation that the driller, at the time the monitoring wells were installed, had a bond on file with the Water Well Advisory Council
- Type of protective well cap
- Screen materials and design (i.e., interval in feet below ground surface and elevation)
- Filter pack material/size and volume (placement narrative)
- Seal emplacement method and type/volume of sealant
- Narrative of well development method
- Well development data
- Well turbidity following development
- Schematic of the well with dimensions for components (e.g., casing, screen, sump, well pad)

5.0 GROUNDWATER MONITORING PARAMETERS AND FREQUENCY

The following describes groundwater sampling requirements with respect to parameters for analysis, sampling frequency, sample preservation and shipment, and analytical methods. Groundwater samples used to provide compliance monitoring data will not be filtered prior to collection.

Table 1, Groundwater Monitoring Parameters and Frequency presents the groundwater monitoring parameters and sampling frequency. A minimum of eight independent samples from each groundwater well will be collected and analyzed for 40 CFR 257, Subpart D, Appendix III and Appendix IV test parameters to establish a background statistical dataset. Subsequently, in accordance with 391-3-4-.10(6), the monitoring frequency for the Appendix III parameters will be at least semi-annual during the active life of the facility and the post-closure care period. If required, assessment monitoring will be performed per Georgia Chapter 391-3-4-.10, Rules for Solid Waste Management. Georgia Power may petition for an alternate monitoring schedule for the site pursuant to applicable rules.

When referenced throughout this plan, Appendix III and Appendix IV parameters refer to the parameters contained in Appendix III and Appendix IV of 40 CFR 257, Subpart D, 80 Fed. Reg. 21468 (April 17, 2015).

As shown on Table 2, Analytical Method, the groundwater samples will be analyzed using methods specified in USEPA Manual SW-846, EPA 600/4-79-020, Standard Methods for the Examination of Water and Wastewater (SM18-20), USEPA Methods for the Chemical Analysis of Water and Wastes (MCAWW), ASTM, or other suitable analytical methods approved by the Georgia EPD. The method used will be able to reach a suitable practical quantification limit to detect natural background conditions at the facility. Field instruments used to measure pH must be accurate and reproducible to within 0.1 Standard Units (S.U.).

Table 1: Groundwater Monitoring Parameters & Frequency

MONITORING PARAMETER		GROUNDWATER MONITORING	
		Background	Semi-Annual Events
Field Parameters	Temperature	X	X
	pH	X	X
	Specific Conductance	X	X
	ORP	X	X
	Turbidity	X	X
	Dissolved Oxygen	X	X
Appendix III (Detection)	Boron	X	X
	Calcium	X	X
	Chloride	X	X
	Fluoride	X	X
	pH	X	X
	Sulfate	X	X
	Total Dissolved Solids	X	X
Appendix IV (Assessment)	Antimony	X	Assessment sampling frequency and parameter list determined in accordance with Georgia Chapter 391-3-4.10(6)
	Arsenic	X	
	Barium	X	
	Beryllium	X	
	Cadmium	X	
	Chromium	X	
	Cobalt	X	
	Fluoride	X	
	Lead	X	
	Lithium	X	
	Mercury	X	
	Molybdenum	X	
	Selenium	X	
	Thallium	X	
	Radium 226 & 228	X	

Table 2: Analytical Methods

PARAMETERS	EPA METHOD NUMBER
APPENDIX III	
Boron	EPA 6010B/6020
Calcium	EPA 6010B/6020
Chloride	EPA 300.0/300.1/9250/9251/9253/9056A
Fluoride	EPA 300.0/300.1/9214/9056A
pH	150.1 field
Sulfate	EPA 9035/9036/9038300.0/300.1/9056A
Total Dissolved Solids (TDS)	EPA 160/2540C
APPENIDX IV	
Antimony	EPA 7040/7041/6010B/6020
Arsenic	EPA 7060A/7061A/6010B/6020
Barium	EPA 7080A/7081/6010B/6020
Beryllium	EPA 7090/7091/6010B/6020
Cadmium	EPA 7130/7131A/6020
Chromium	EPA 7190/7191/6010B/6020
Cobalt	EPA 7200/7201/6010B/6020
Fluoride	EPA 300.0/300.1/9214/9056/9214
Lead	EPA 7420/7421/6010B/6020
Lithium	EPA 6010/6020B
Mercury	EPA 7470
Molybdenum	EPA 6010/6020B
Selenium	EPA 7740/7741A/6010B/6020
Thallium	EPA 7840/7841/6010/6020
Radium 226 and 228 combined	EPA 903/9320/9315

6.0 SAMPLE COLLECTION

During each sampling event, samples will be collected and handled in accordance with the procedures specified in Appendix C, Groundwater Sampling Procedures. Sampling procedures were developed using standard industry practice and USEPA Region 4 Field Branches Quality System and Technical Procedures as a guide. Low-flow sampling methodology will be utilized for sample collection. Alternative industry accepted sampling techniques may be used when appropriate with prior EPD approval.

For groundwater sampling, positive gas displacement Teflon™ or stainless-steel bladder pumps will be used for purging. If dedicated bladder pumps are not used, portable bladder pumps or peristaltic pumps (with dedicated or disposable tubing) may be used. When non-dedicated equipment is used, it will be decontaminated prior to use and between wells.

7.0 CHAIN-OF-CUSTODY

Samples will be handled under chain-of-custody (COC) procedures beginning in the field. The COC record will contain the following information:

- Sample identification numbers
- Signature of collector
- Date and time of collection
- Sample type
- Sample point identification
- Number of sample containers
- Signature of person(s) involved in the chain of possession
- Dates and times of possession by each individual

The samples will remain in the custody of assigned personnel, an assigned agent, or the laboratory. If the samples are transferred to other employees for delivery or transport, the sampler or possessor must relinquish possession and the samples must be received by the new owner.

If the samples are being shipped, a hard copy COC will be signed and enclosed within the shipping container.

Samplers must use COC forms provided by the analytical laboratory or use a COC form similarly formatted and containing the information listed above.

8.0 FIELD AND LABORATORY QUALITY ASSURANCE/QUALITY CONTROL

Field quality control samples will be prepared the same as compliance samples with regards to sample volume, containers, and preservation. The following quality control samples will be collected during each sampling event:

Field Equipment Rinsate Blanks - Where sampling equipment is not new or dedicated, an equipment rinsate blank will be collected at a rate of one blank per 20 samples using non-dedicated equipment.

Field Duplicates - Field duplicates are collected by filling additional containers at the same location, and the field duplicate is assigned a unique sample identification number. One blind field duplicate will be collected for every 20 samples.

Field Blanks - Field blanks are collected in the field using the same water source that is used for decontamination. The water is poured directly into the supplied sample containers in the field and submitted to the laboratory for analysis of target constituents. One field blank will be collected for every 20 samples

The groundwater samples will be analyzed by licensed and accredited laboratories through the National Environmental Laboratory Accreditation Program (NELAP).

9.0 REPORTING RESULTS

A semi-annual groundwater report that documents the results of sampling and analysis will be submitted to EPD. Semi-annual groundwater monitoring reports will be submitted to the EPD within 90 days of receipt of the groundwater analytical data from the laboratory. At a minimum, semi-annual reports will include:

1) A narrative describing sampling activities and findings including a summary of the number of samples collected, the dates the samples were collected and whether the samples were required by the detection or assessment monitoring programs

2) A record of field sampling conditions including, well signage, well access, sampling and purging equipment condition and site conditions that may affect sampling will be recorded on the Well Inspection Form (Appendix C). These forms will be included as an appendix to the semi-annual groundwater monitoring reports

3) A brief overview of purging/sampling methodologies

4) Discussion of results

5) Recommendations for the future monitoring consistent with the Rules

6) Potentiometric surface contour map for the aquifer(s) being monitored, signed and sealed by a Georgia-registered PG or PE.

7) Table of as-built information for groundwater monitoring wells including top of casing elevations, ground elevations, screened elevations, current groundwater elevations and depth to water measurements

8) Groundwater flow rate and direction calculations

9) Identification of any groundwater wells that were installed or decommissioned during the preceding year, along with a narrative description of why these actions were taken

10) A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels

11) If applicable, semi-annual assessment monitoring results

12) Any alternate source demonstration completed during the previous monitoring period, if applicable

13) Laboratory Reports

14) COC documentation

15) Field sampling logs including field instrument calibration, indicator parameters and parameter stabilization data

16) Documentation of non-functioning wells

17) Table of current analytical results for each well, highlighting statistically significant increases and concentrations above maximum contaminant level (MCL)

18) Statistical analyses

19) Certification by a qualified groundwater scientist.

10.0 STATISTICAL ANALYSES

Groundwater quality data from each sampling event will be statistically evaluated to determine if there has been a statistically significant change in groundwater chemistry. Historical background data will be used to determine statistical limits. An inter-well statistical method will be used to compare Appendix III groundwater monitoring data to background conditions. Confidence intervals will be constructed for each downgradient well and used to compare Appendix IV groundwater monitoring data to the groundwater protection standards. These statistical analyses methods are consistent with the Unified Guidance (EPA, 2009).

According to EPD rules (391-3-4-.10(6)(a), which incorporates the statistical analysis requirements of 40 CFR 257.93 by reference), the site must specify in the operating record the statistical methods to be used in evaluating groundwater monitoring data for each constituent. The statistical test chosen shall be conducted separately for each constituent in each well. As authorized by the rule, statistical tests that may be used include:

1) A prediction interval procedure in which an interval for each constituent is established from the distribution of the background data, and the level of each constituent in each compliance well is compared to the upper prediction limit (§257.93(f)(3)).

2) A control chart approach that gives control limits for each constituent ((§257.93(f)(4)).

3) Another statistical test method (such as prediction limits or control charts) that meets the performance standards of §257.93(g). A justification for an alternative method will be placed in the operating record and the Director notified of the use of an alternative test. The justification will demonstrate that the alternative method meets the performance standards of §257.93(g).

Based on site-specific conditions, statistical methods may be intra-well, inter-well, or combination of both.

A site-specific statistical analysis plan that provides details regarding the statistical methods to be used will be placed in the site's operating record pursuant to 391-3-4-.10(6). Figure 1, Statistical Analysis Plan Overview, includes a flowchart that depicts the process that will be followed to develop the site-specific plan. Figure 2, Decision Logic for Determining Appropriate Statistical Methods, depicts the decision logic that will be used to determine the appropriate method as required by 391-3-4-.10(6). Figure 3, Decision Logic for Computing Prediction Limits, presents the logic that will be used to calculate site-specific statistical limits and test compliance results against those limits.

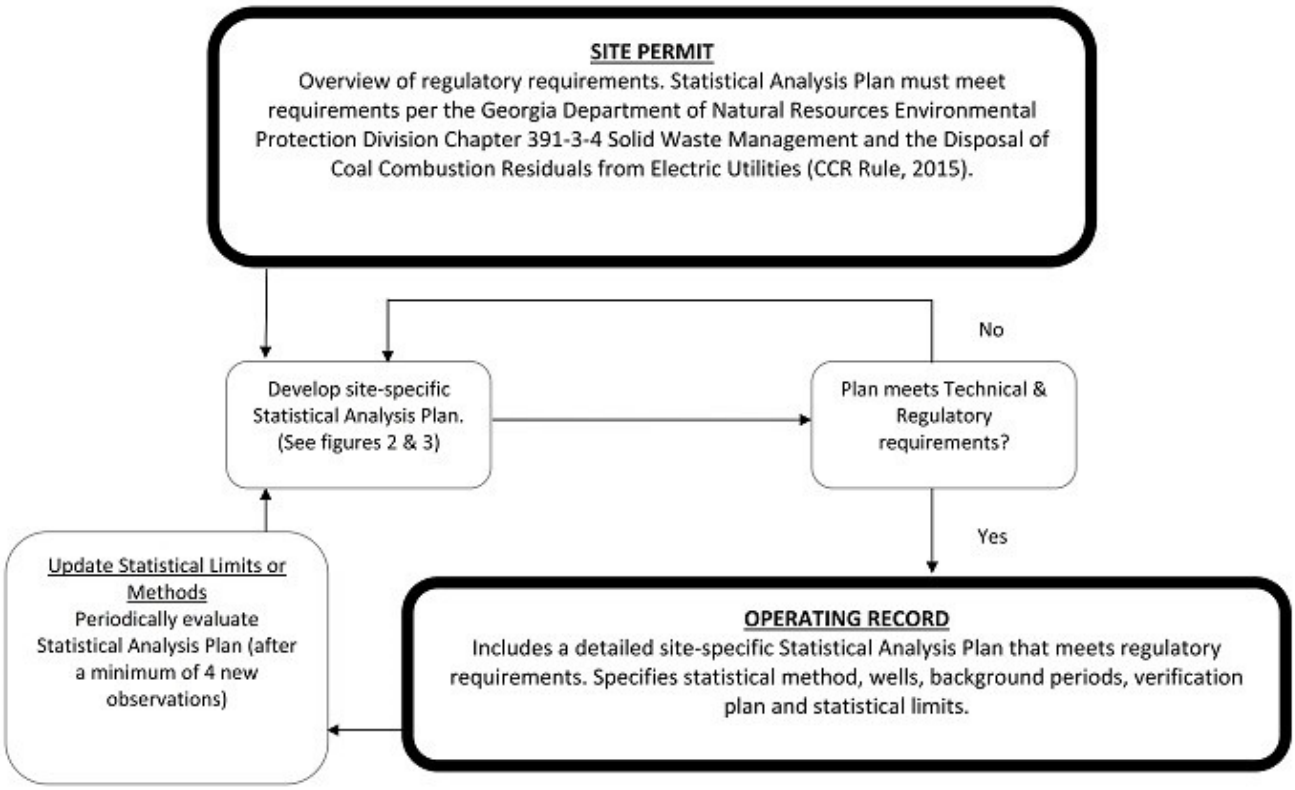


Figure 1: Statistical Plan Overview

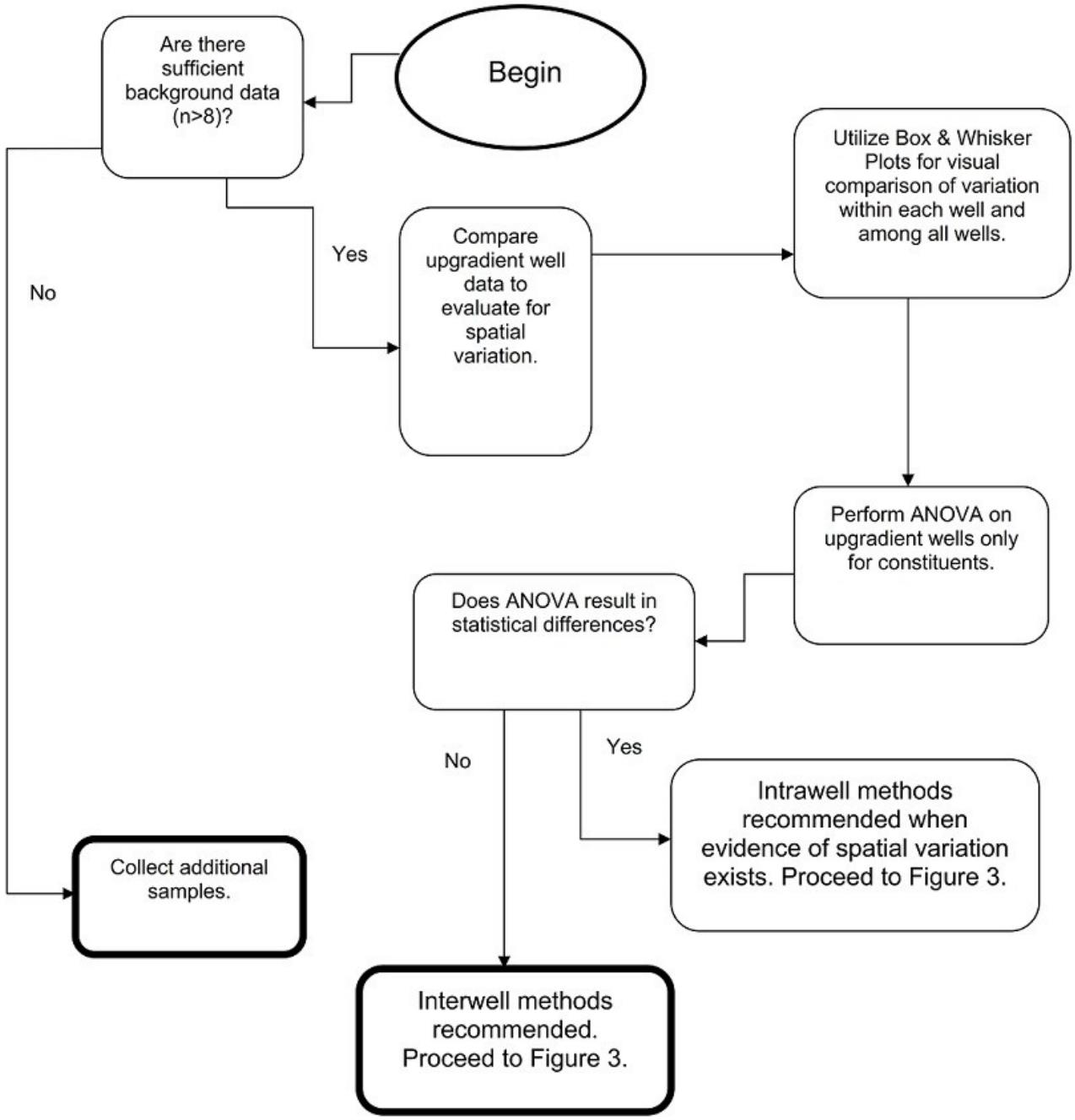


Figure 2: Decision Logic for Determining Appropriate Statistical Method

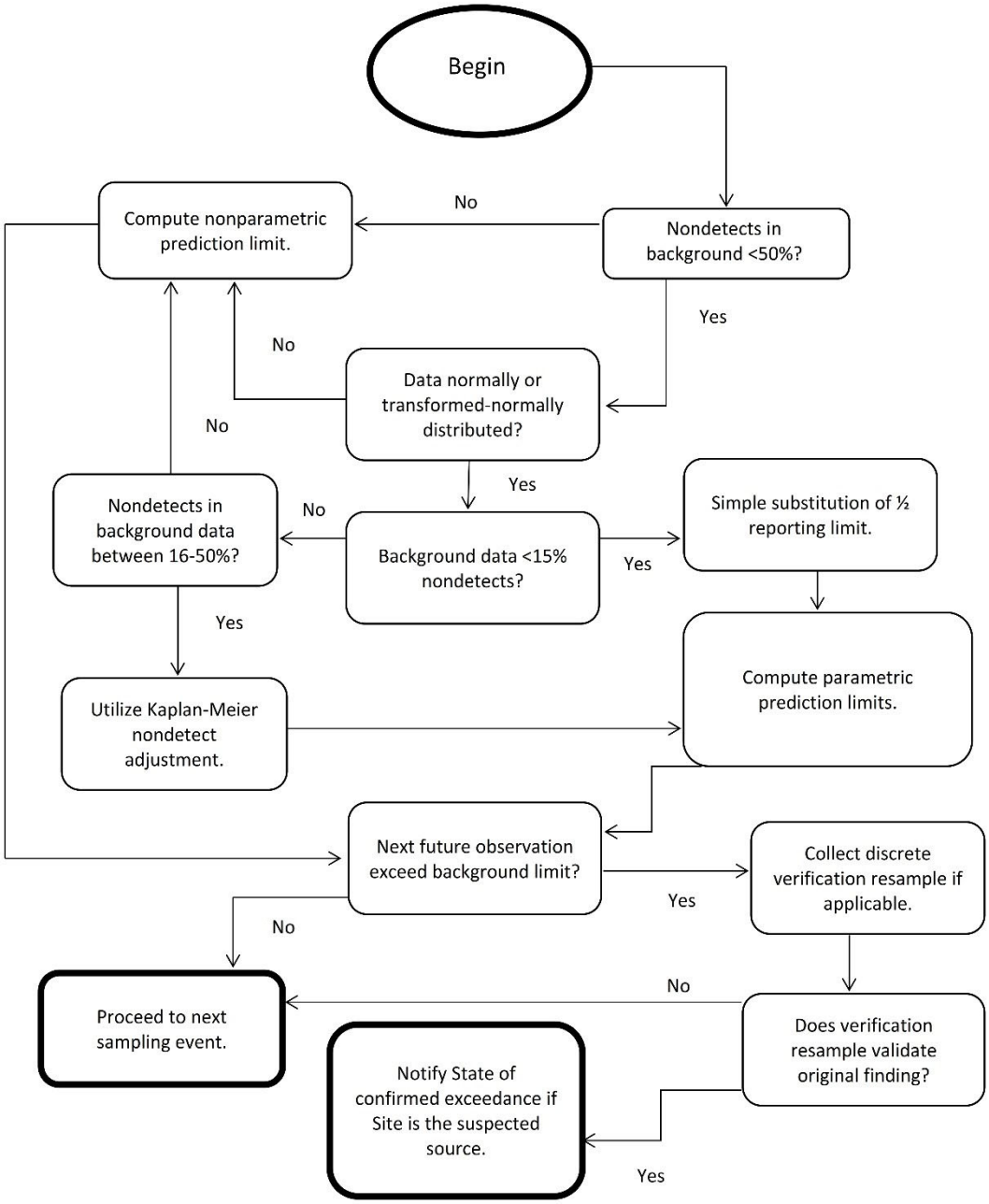


Figure 3: Decision Logic for Computing Prediction Limits

11.0 REFERENCES

Georgia (GA) Department of Natural Resources Environmental Protection Division, Rules of Solid Waste Management, Chapter 391-3-4-.10(6), Georgia Environmental Protection Division.

Georgia Water Well Standards Act (1985)

Golder Associates Inc., Hydrogeological Assessment Report Plant McDonough, (November 2020)

GA EPD Manual for Groundwater Monitoring (1991)

Region 4 U.S. Environmental Protection Agency Science and Ecosystem Support Division, Operating Procedure for Design and Installation of Monitoring Wells, February 18, 2008

Region 4 U.S. Environmental Protection Agency, Field Branches Quality System and Technical Procedures, November 11, 2018

U.S. Environmental Protection Agency, Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance, (EPA 530-R-09-007), March 2009.

U.S. Environmental Protection Agency, Science and Ecosystem Support Division, Field Equipment Cleaning and Decontamination, (SESDPROC-205-R3), December 18, 2015.

U.S. Environmental Protection Agency, 40 CFR 257, Subpart D, 80 Fed. Reg. 21468 (April 17, 2015)

U.S. Environmental Protection Agency, Manual SW-846, EPA 600/4-79-020, Standard Methods for the Examination of Water and Wastewater (SM18-20)

U.S. Environmental Protection Agency, Methods for the Chemical Analysis of Water and Wastes (MCAWW)

APPENDIX A

MONITORING SYSTEM DETAILS

TABLE A1 MONITORING WELL NETWORK SUMMARY

TABLE A2 GROUNDWATER PIEZOMETER DETAILS

FIGURE A1 MONITORING WELL LOCATION MAP

FIGURE A2 POTENTIOMETRIC SURFACE ELEVATION CONTOUR MAP – AUGUST 10, 2020

MONITORING WELL LOGS

PIEZOMETER WELL LOGS

CERTIFIED WELL SURVEY REPORT

TABLE A1
MONITORING WELL NETWORK SUMMARY
Georgia Power Company - Plant McDonough-Atkinson
Smyrna, GA

Well-ID	Hydraulic Location	Screened Media	NAD 83 Northing	NAD 83 Easting	Top of Casing Elevation (feet NAVD 88)	Ground Surface Elevation (feet NAVD 88)	Total Well Depth (feet bgs)	Top of Screen Elevation (feet NAVD 88)	Bottom of Screen Elevation (feet NAVD 88)	Screen Length (feet)	Date of Installation
ASH POND 2 and ASH PONDS 3/4 (AP-2, 3/4) MONITORING WELL NETWORK											
DGWA-53	Upgradient	Upper Bedrock	1393472.8	2201668.8	844.26	841.3	28.9	823.7	813.7	10	9/24/2016
DGWA-70A	Upgradient	Overburden	1390481.4	2200591.6	808.52	805.8	59.3	756.9	746.9	10	5/10/2017
DGWA-71	Upgradient	Overburden	1393963.3	2201714.8	863.84	861.2	43.8	827.8	817.8	10	2/28/2017
DGWC-2	Downgradient	Overburden/Upper Bedrock	1393958.0	2202119.5	850.88	848.3	49.0	809.6	799.6	10	10/2/2012
DGWC-4	Downgradient	Overburden	1394171.5	2202662.4	814.85	812.1	45.0	777.4	767.4	10	10/3/2012
DGWC-5	Downgradient	Overburden/Upper Bedrock	1394306.3	2202965.1	791.75	788.7	30.0	769.0	759.0	10	10/4/2012
DGWC-8	Downgradient	Overburden	1394322.2	2203882.1	826.38	824.1	49.1	785.4	775.4	10	10/10/2012
DGWC-9	Downgradient	Overburden	1394055.9	2204170.0	824.35	821.8	30.0	802.2	792.2	10	10/10/2012
DGWC-10	Downgradient	Overburden	1393818.3	2204201.1	823.55	820.9	45.4	785.9	775.9	10	10/11/2012
DGWC-11	Downgradient	Overburden	1393547.1	2204166.2	800.57	798.1	49.1	759.3	749.3	10	10/15/2012
DGWC-12	Downgradient	Overburden	1393149.4	2204128.3	773.86	771.2	25.1	756.5	746.5	10	10/15/2012
DGWC-13	Downgradient	Overburden	1392881.1	2204084.6	794.10	791.3	43.8	757.9	747.9	10	11/29/2012
DGWC-14	Downgradient	Overburden/Upper Bedrock	1392574.2	2204013.3	792.40	789.8	34.3	765.9	755.9	10	12/18/2012
DGWC-15	Downgradient	Overburden	1392544.1	2203679.0	824.50	821.5	67.1	764.8	754.8	10	11/29/2012
DGWC-17	Downgradient	Overburden	1392645.6	2203051.0	837.05	834.2	44.5	800.0	790.0	10	1/9/2013
DGWC-19	Downgradient	Overburden	1392342.6	2202601.0	825.46	822.9	39.8	793.5	783.5	10	3/12/2013
DGWC-20	Downgradient	Overburden	1392164.5	2202315.6	822.14	819.8	39.7	790.7	780.7	10	3/5/2013
DGWC-21	Downgradient	Overburden/Upper Bedrock	1392067.5	2202063.5	816.28	813.5	69.0	754.9	744.9	10	10/31/2012
DGWC-22	Downgradient	Upper Bedrock	1392126.3	2201791.9	816.59	813.7	60.0	764.0	754.0	10	10/25/2012
DGWC-23	Downgradient	Upper Bedrock	1392239.7	2201582.0	818.37	815.7	60.1	765.9	755.9	10	10/25/2012
DGWC-42	Downgradient	Overburden	1391327.8	2201870.2	804.68	802.0	50.4	762.1	752.1	10	11/12/2012
DGWC-47	Downgradient	Overburden/Upper Bedrock	1391553.8	2202610.5	797.45	794.3	28.8	775.9	765.9	10	6/23/2016
DGWC-48	Downgradient	Overburden/Upper Bedrock	1391314.6	2202290.2	788.33	785.2	30.0	765.6	755.6	10	6/22/2016

Notes:

1. bgs = below ground surface
2. Coordinate System: NAD 1983 State Plane Georgia West (U.S. feet)
3. NAD - North American Datum; NAVD - North American Vertical Datum
4. Updated field survey completed by Metro Engineering in July 2020.

TABLE A2
GROUNDWATER PIEZOMETER DETAILS
Georgia Power Company - Plant McDonough
Atlanta, GA

Well-ID	Hydraulic Location	Screened Media	NAD 83 Northing	NAD 83 Easting	Top of Casing Elevation (feet NAVD 88)	Ground Surface Elevation (feet NAVD 88)	Total Well Depth (feet bgs)	Top of Screen Elevation (feet NAVD 88)	Bottom of Screen Elevation (feet NAVD 88)	Screen Length (feet)	Date of Installation
PIEZOMETERS											
B-3	Downgradient	Overburden/Upper Bedrock	1394045.1	2202411.5	837.78	835.0	37.0	808.3	798.3	10	10/3/2012
B-6	Downgradient	Overburden	1394419.5	2203266.5	789.47	786.5	35.4	761.5	751.5	10	10/9/2012
B-7	Downgradient	Overburden	1394374.6	2203596.1	809.16	806.1	25.2	791.3	781.3	10	10/9/2012
B-16	Downgradient	Overburden	1392595.1	2203315.4	826.47	823.6	43.7	790.2	780.2	10	12/19/2012
B-18	Downgradient	Overburden	1392521.0	2202875.5	826.56	823.9	32.6	801.5	791.5	10	1/10/2013
B-24	Downgradient	Upper Bedrock	1392479.9	2201450.0	822.11	819.3	79.1	751.0	741.0	10	10/24/2012
B-25	Downgradient	Upper Bedrock	1392813.3	2201502.7	836.54	833.5	54.8	789.1	779.1	10	10/24/2012
B-26	Downgradient	Upper Bedrock	1393105.6	2201550.4	853.60	850.6	49.3	811.7	801.7	10	10/23/2012
B-27	Downgradient	Upper Bedrock	Abandoned								
B-28	Downgradient	Overburden/Upper Bedrock	1391967.4	2201679.2	816.08	813.3	69.4	754.3	744.3	10	10/31/2012
B-29	Downgradient	Overburden	1391890.0	2201422.0	816.43	813.5	54.4	769.4	759.4	10	1/11/2013
B-31	Downgradient	Upper Bedrock	1392034.3	2200928.5	797.47	794.9	45.1	760.2	750.2	10	1/22/2013
B-41	Downgradient	Overburden	1390920.8	2201751.9	795.20	792.4	60.0	743.0	733.0	10	11/14/2012
B-50	Downgradient	Overburden	1391657.1	2201841.0	809.67	809.2	36.0	784.4	774.4	10	6/24/2016
B-51	Downgradient	Overburden	1390501.2	2200906.5	765.92	763.3	65.0	708.3	698.3	10	6/27/2016
B-52	Downgradient	Overburden	1392308.3	2201314.8	822.89	820.3	50.0	781.4	771.4	10	9/28/2016
B-54	Downgradient	Overburden/Upper Bedrock	1394423.5	2203140.7	785.46	782.6	34.2	758.8	748.8	10	9/26/2016
B-55	Downgradient	Overburden	1394142.6	2204147.9	825.12	822.9	52.0	781.9	771.9	10	9/22/2016
B-56	Downgradient	Overburden	1393957.9	2204187.8	823.59	821.0	45.0	786.4	776.4	10	10/3/2016
B-57	Downgradient	Upper Bedrock	1391396.3	2202736.9	789.04	786.0	50.5	746.0	736.0	10	9/24/2016
B-58	Downgradient	Overburden	1391125.7	2202426.5	788.17	785.2	45.0	750.7	740.7	10	9/23/2016
B-59	Downgradient	Overburden/Upper Bedrock	1394349.1	2203001.1	788.00	785.5	30.3	765.3	755.3	10	9/23/2016
B-60	Downgradient	Overburden	1391100.7	2202881.6	782.13	779.2	49.8	739.9	729.9	10	9/29/2016
B-61	Downgradient	Overburden	1390957.8	2202505.8	782.09	779.0	51.9	737.5	727.5	10	9/29/2016
B-62	Downgradient	Upper Bedrock	1389828.1	2201811.2	760.08	760.4	39.9	730.7	720.7	10	10/4/2016
B-63	Downgradient	Overburden	1390999.1	2202978.1	777.10	777.3	46.0	741.8	731.8	10	10/6/2016
B-64	Downgradient	Overburden	1394381.9	2203031.3	785.83	786.1	30.4	766.1	756.1	10	11/2/2016

TABLE A2
GROUNDWATER PIEZOMETER DETAILS
Georgia Power Company - Plant McDonough
Atlanta, GA

Well-ID	Hydraulic Location	Screened Media	NAD 83 Northing	NAD 83 Easting	Top of Casing Elevation (feet NAVD 88)	Ground Surface Elevation (feet NAVD 88)	Total Well Depth (feet bgs)	Top of Screen Elevation (feet NAVD 88)	Bottom of Screen Elevation (feet NAVD 88)	Screen Length (feet)	Date of Installation
PIEZOMETERS											
B-65	Downgradient	Overburden/Upper Bedrock	1394381.2	2204050.8	821.95	822.3	45.4	787.9	777.9	10	11/15/2016
B-66	Downgradient	Overburden	1393858.2	2204277.5	815.90	813.3	55.3	768.3	758.3	10	11/16/2016
B-68	Downgradient	Overburden	1391298.2	2200714.2	758.68	759.0	18.0	751.0	741.0	10	3/16/2017
B-70	Downgradient	Overburden	Abandoned								
B-77	Downgradient	Overburden	1390948.7	2202942.0	776.86	777.1	42	745.1	735.1	10	9/17/2019
B-78	Downgradient	Overburden/Upper Bedrock	1394328.2	2202958.2	790.75	788.0	30	768.0	758.5	10	9/22/2019
B-79	Downgradient	Overburden	1394458.6	2203223.0	788.66	785.9	34.93	761.0	751.5	10	9/21/2019
B-80	Downgradient	Overburden	1394372.6	2203533.9	804.47	801.8	30	782.0	772.5	10	9/20/2019
B-81	Downgradient	Overburden	1394364.9	2203741.1	820.56	817.7	50	778.5	768.5	10	9/22/2019
B-82	Downgradient	Overburden	1393750.0	2204258.1	810.07	807.5	45	773.0	763.0	10	9/21/2019
B-83	Downgradient	Overburden	1390735.5	2202695.6	776.98	777.1	48.6	738.5	728.5	10	9/30/2019
B-84	Downgradient	Overburden	1390411.9	2202241.9	776.34	776.6	49.1	737.5	727.5	10	10/1/2019
B-85	Downgradient	Overburden/Upper Bedrock	1394433.4	2203134.5	782.54	782.7	34.5	758.5	748.5	10	11/18/2019
B-86	Downgradient	Overburden/Upper Bedrock	1394480.0	2203206.6	784.29	784.6	34.1	760.5	750.5	10	11/18/2019
B-87	Downgradient	Overburden	1394401.9	2203531.3	803.37	800.4	42	768.7	758.7	10	11/17/2019
B-88	Downgradient	Overburden	1394401.1	2203738.3	820.07	817.0	72	755.0	745.0	10	11/15/2019
B-89	Downgradient	Upper Bedrock	1394398.4	2204049.4	822.36	822.6	49.5	783.1	773.1	10	11/19/2019
B-90	Downgradient	Overburden	1394501.0	2203212.6	784.00	784.2	33.4	760.8	750.8	10	12/10/2019
B-91	Downgradient	Overburden	1394447.1	2203123.9	782.98	783.1	34.6	758.5	748.5	10	12/11/2019
B-92	Downgradient	Overburden	1394392.7	2203026.7	785.08	785.3	24.6	770.7	760.7	10	12/11/2019
B-93	Downgradient	Overburden	1394348.7	2202946.7	789.07	789.2	28.9	770.3	760.3	10	12/12/2019
B-94	Downgradient	Overburden	1394402.0	2203513.7	801.74	799.2	45.24	764.6	754.6	10	1/23/2020
B-95	Downgradient	Overburden	1394518.6	2203167.7	784.00	784.3	33.3	761.3	751.3	10	2/11/2020

TABLE A2
GROUNDWATER PIEZOMETER DETAILS
Georgia Power Company - Plant McDonough
Atlanta, GA

Well-ID	Hydraulic Location	Screened Media	NAD 83 Northing	NAD 83 Easting	Top of Casing Elevation (feet NAVD 88)	Ground Surface Elevation (feet NAVD 88)	Total Well Depth (feet bgs)	Top of Screen Elevation (feet NAVD 88)	Bottom of Screen Elevation (feet NAVD 88)	Screen Length (feet)	Date of Installation
PIEZOMETERS											
B-96	Downgradient	Overburden	1394478.7	2203099.3	784.92	785.3	33.1	762.2	752.2	10	2/10/2020
B-97	Downgradient	Overburden/Upper Bedrock	1394430.0	2203008.3	786.29	786.6	31	765.3	755.3	10	2/11/2020
B-98	Downgradient	Overburden	1394392.5	2202934.0	789.67	789.8	19.4	780.8	770.8	10	2/10/2020
B-99	Downgradient	Overburden	1394524.2	2203084.5	782.39	782.6	12.3	775.3	770.3	5	7/7/2020
B-100	Downgradient	Overburden	1390254.8	2202242.1	777.95	775.3	44.8	740.5	730.5	10	7/8/2020

Notes:

1. bgs = below ground surface
2. Coordinate System: NAD 1983 State Plane Georgia West (U.S. feet)
3. NAD - North American Datum; NAVD - North American Vertical Datum
4. Updated field survey conducted by Metro Engineering in July 2020.

LEGEND

- UPGRADIENT WELL
- AP-2, 3/4 MONITORING WELL
- AP-2, 3/4 PERMIT BOUNDARY
- PROPERTY BOUNDARY

NOTES

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.

REFERENCE

1. AERIAL IMAGE DATED NOVEMBER 2018 FROM GOOGLE EARTH.

2. COORDINATE SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET).

3. MONITORING WELL LOCATIONS PROVIDED BY SOUTHERN COMPANY SERVICES.

4. APPROXIMATE PROPERTY BOUNDARY PROVIDED BY SOUTHERN COMPANY (2018). DATE OF PHOTOGRAPHY 09-7-2018.

5. UPDATED FIELD SURVEY COMPLETED BY METRO ENGINEERING IN JULY 2020.

0 600 1,200

1 IN= 600 FT

CLIENT
GEORGIA POWER COMPANY
PLANT MCDONOUGH

PROJECT
GROUNDWATER MONITOROING PLAN

TITLE
ASH POND 2 (AP-2) & ASH PONDS 3/4 (AP-3/4) SITE PLAN & MONITORING WELL LOCATION MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2020-08-10
PREPARED	SEB
DESIGN	SEB
REVIEW	BAS
APPROVED	TIR

PROJECT No. 166849618
Rev. 0
FIGURE A1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET HAS BEEN MODIFIED FROM: ANSI B

Path: O:\GIS\Southern Company\166849618-SCS-Plant McDonough\figures\AshPonds_2and3-4_WellLocationMap_SEB.mxd

LEGEND

- PIEZOMETER
- AP-1 MONITORING WELL
- AP-2,3/4 MONITORING WELL
- UPGRADIENT WELL
- PERMIT BOUNDARY
- PROPERTY BOUNDARY
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- GROUNDWATER SURFACE CONTOUR (FAMSL)

NOTES

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
2. GROUNDWATER ELEVATION MEAUSREMENTS OBTAINED AUGUST 10, 2020 BY GOLDER ASSOCIATES.
3. GROUNDWATER ELEVATIONS DISPLAYED IN FEET ABOVE MEAN SEA LEVEL (FAMSL).
4. B-27, B-68, AND DGWA-70 ARE NOT USED AS MONITORING WELLS DUE TO WELL REPLACEMENT, PROXIMITY TO CLOSURE ACTIVITIES, OR MODIFICATIONS TO THE PROPOSED WELL NETWORK.
5. B-72 THROUGH B-74 WATER LEVELS NOT TAKEN DURING AUGUST 10, 2020 EVENT.
6. UPDATED FIELS SURVEY COMPLETED BY METRO ENGINEERING IN JULY 2020.

REFERENCE

1. AERIAL IMAGE DATED NOVEMBER 2018 FROM GOOGLE EARTH.
2. COORDINATE SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET).
3. MONITORING WELL/PIEZOMETER LOCATIONS PROVIDED BY SOUTHERN COMPANY SERVICES.

0 600 1,200

1 IN= 600 FT

CLIENT
SOUTHERN COMPANY SERVICES, INC.
PLANT MCDONOUGH

Southern Company

PROJECT
GROUNDWATER MONITORING PLAN

TITLE
SITE POTENTIOMETRIC MAP
AUGUST 10, 2020

CONSULTANT
GOLDER

YYYY-MM-DD	2020-08-10
PREPARED	SEB
DESIGN	SEB
REVIEW	BAS
APPROVED	TIR

PROJECT No. 166849618
Rev. 0
FIGURE A2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET HAS BEEN MODIFIED FROM: ANSI B

Path: Q:\GIS\Southern Company\166849618-SCS-Plant McDonough\figures\SitePotentiometricMap_SEB_Aug2020_WL.mxd

AP-2, 3/4 MONITORING WELL LOGS

Location resurveyed June - July 2020

RECORD OF BOREHOLE DGWA-53/B-53

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 28.90 ft
LOCATION: in the middle of the pond of the construction area of AP3

DRILL RIG: CME 55
DATE STARTED: 9/24/16
DATE COMPLETED: 9/24/16

NORTHING: 1,393,472.80
EASTING: 2,201,668.80
GS ELEVATION: 841.3
TOC ELEVATION: 844.26 ft

DEPTH W.L.: 10.08
ELEVATION W.L.: 831.22
DATE W.L.: 10/6/2016
TIME W.L.: 1233

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	840	0.00 - 3.50 SM, silt SAND, fine to medium grained, non-plastic, tan, non-cohesive, dry to moist, compact	SM	837.8	1	DO	2-4-6	10	1.50
5	835	3.50 - 12.20 SM, silt SAND, fine to medium grained, non-plastic, tan, non-cohesive, dry to moist, compact to dense (saprolite). Auger Refusal at 12.2	SM	3.50	2	DO	4-6-6	12	1.50
10	830				3	DO	5-13-35	48	1.50
		12.20 - 29.50 Bedrock; GNEISS; competent, thinly foliated.	BR	829.1 12.20					
30	810	Boring completed at 28.90 ft		811.8 29.50					

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES

CETCO puregold grout (70:30) / aluminum casing
CETCO puregold grout (70:30)
PEL-PLUG 3/8" Bentonite pellets
FilterSil
0.010" slotted screen

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0-17.6'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 17.6'-27.6'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 12'-28.9'
Type: FilterSil

FILTER PACK SEAL
Interval: 8'-12'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-8'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad:
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: HQ Core Barrell

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: Nortey Yeboah
CHECKED BY: Timothy Richards, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE DGWA-70A/B-70A

SHEET 1 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 60.00 ft
LOCATION: ~400' west of the SW corner of AP-1

DRILL RIG: CME 550
DATE STARTED: 5/10/17
DATE COMPLETED: 5/10/17

NORTHING: 1,390,481.40
EASTING: 2,200,591.60
GS ELEVATION: 805.8
TOC ELEVATION: 808.52 ft

DEPTH W.L.: 42.9
ELEVATION W.L.: 762.9
DATE W.L.: 5/10/2017
TIME W.L.: 10:45

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES
0	805	0.00 - 5.00 CL-CH, low to high plasticity CLAY with trace fine sand; red orange; cohesive, moist	CL-CH		800.8						
5	800	5.00 - 13.50 ML, SILT, trace fine sand, low plasticity; yellowish brown, contians mica; cohesive, moist, w<PL, soft.	ML		5.00 792.3						
10	795										
15	790	13.50 - 28.50 ML, SILT, trace fine to coarse sand, non to low plasticity; yellowish brown to orange brown, iron staining weathered, relict structure (gneissic); cohesive, moist, w<PL, soft.	ML		13.50	S1	DO	6-7-7	14	0.83/1.50	
						S2	DO	5-9-13	22	1.50/1.50	Pure Gold Grout – Mixture
20	785										
						S3	DO	5-9-10	19	1.50/1.50	
25	780				777.3						
		28.50 - 38.50 ML, SILT, trace sand, low plasticity; medium to dark gray, highly micaceous; cohesive, moist to wet (increase with depth), w<PL, soft.	ML		28.50	S4	DO	5-8-11	19	1.50/1.50	
30	775										
						S5	DO	5-11-15	26	1.50/1.50	
35	770				767.3						
		38.50 - 53.50 ML, SILT, trace sand, low plasticity; medium to dark gray, saprolite, highly micaceous; cohesive, moist to wet (increase with depth), w<PL, soft.	ML		38.50	S6	DO	4-8-10	18	1.50/1.50	
40	765										
						S7	DO	20-50/4	50/4	0.75/1.50	Pel-Plug 3/8" Bentonite – Pellets
45		Log continued on next page									

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 59.3'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 48.9' - 58.9'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: 58.9' - 59.3'

FILTER PACK
Interval: 46.9' - 59.3'
Type: FilterSil Gravel Pack

FILTER PACK SEAL
Interval: 43.4' -46.9'
Type: Pel-Plug 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0' - 43.4'
Type: Pure Gold Grout Mixture

WELL COMPLETION
Pad: 4' x 4' concrete
Protective Casing: 4" x 4" x 5' Aluminum

DRILLING METHODS
Soil Drill: 8.25 Hollow-Stem Auger
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: Michael Boatman, PG
CHECKED BY: Timothy Richards, PG
DATE: 1/16/18

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE DGWA-70A/B-70A

SHEET 2 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 60.00 ft
LOCATION: ~400' west of the SW corner of AP-1

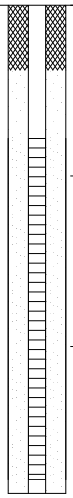
DRILL RIG: CME 550
DATE STARTED: 5/10/17
DATE COMPLETED: 5/10/17

NORTHING: 1,390,481.40
EASTING: 2,200,591.60
GS ELEVATION: 805.8
TOC ELEVATION: 808.52 ft

DEPTH W.L.: 42.9
ELEVATION W.L.: 762.9
DATE W.L.: 5/10/2017
TIME W.L.: 10:45

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
45	760	38.50 - 53.50 ML, SILT, trace sand, low plasticity; medium to dark gray, saprolite, highly micaceous; cohesive, moist to wet (increase with depth), w<PL, soft. *(Continued)*	ML							
						S8	DO	50/4	50/4	0.00 / 1.50
50	755				752.3					
		53.50 - 60.00 SM, Silty SAND, fine grained, low plasticity; dark gray, contians mica; non-cohesive, moist, w<PL, dense.	PWR		53.50	S9	DO	50/3	50/3	0.25 / 1.50
55	750									
						S10	DO	50/2	50/2	0.17 / 1.50
60	745	Boring completed at 60.00 ft			745.8					
65	740									
70	735									
75	730									
80	725									
85	720									
90										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 59.3'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 48.9' - 58.9'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: 58.9' - 59.3'

FILTER PACK
Interval: 46.9' - 59.3'
Type: FilterSil Gravel Pack

FILTER PACK SEAL
Interval: 43.4' -46.9'
Type: Pel-Plug 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0' - 43.4'
Type: Pure Gold Grout Mixture

WELL COMPLETION
Pad: 4' x 4' concrete
Protective Casing: 4" x 4" x 5' Aluminum

DRILLING METHODS
Soil Drill: 8.25 Hollow-Stem Auger
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: Michael Boatman, PG
CHECKED BY: Timothy Richards, PG
DATE: 1/16/18

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE DGWA-71/B-71

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 43.80 ft
LOCATION: NW corner of site, inside cell tower gate.

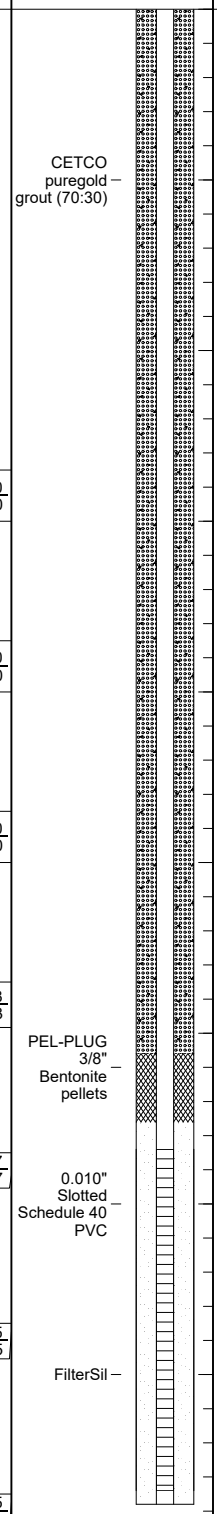
DRILL RIG: CME 550
DATE STARTED: 2/28/17
DATE COMPLETED: 2/28/17

NORTHING: 1,393,963.30
EASTING: 2,201,714.80
GS ELEVATION: 861.2
TOC ELEVATION: 863.84 ft

DEPTH W.L.: 27.1
ELEVATION W.L.: 834.1
DATE W.L.: 2/28/17
TIME W.L.: 1245

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	860	0.00 - 10.50 Hydrovac			850.7					
10	850	10.50 - 20.00 Sand with some silt, sands fine, white/black/grey weathered granite/granite gneiss, non plastic, moist, compact.	SP-SM		10.50	S1	SPT	4-8-10	18	1.50 / 1.50
15	845									
20	840				841.2	S2	SPT	2-5-7	12	1.50 / 1.50
		20.00 - 30.00 Silty Sand, sands fine, white/black/grey weathered granite/granite gneiss, non plastic, moist, dense.	SM		20.00	S3	SPT	4-7-11	18	1.50 / 1.50
25	835									
						S4	SPT	8-21-50/4	71/10	1.33 / 1.33
30	830	30.00 - 35.00 Sand with trace to some silt, sands fine to medium, white/black/grey, non plastic, moist, very dense.	SP-SM		831.2 30.00	S5	SPT	43-50/2	50/2	0.67 / 0.67
35	825	35.00 - 43.80 Sand with trace silt and gravel (rock fragments), sands fine to medium, white/black/grey, non plastic, wet, very dense, and some iron staining in samples.	PWR		826.2 35.00	S6	SPT	50/3	50/3	0.25 / 0.25
40	820									
					817.4	S7	SPT	50/3	50/3	0.25 / 0.25
45		Boring completed at 43.80 ft								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-33.4'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screen

WELL SCREEN
Interval: 33.4'-43.4'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 32.6'-43.8'
Type: FilterSil

FILTER PACK SEAL
Interval: 30.6'-32.6'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 1'-30.6'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 4'x4' Concrete
Protective Casing: 4" x 4" x 5' Aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: Michael Boatman, PG
CHECKED BY: Timothy Richards, PG
DATE: 1/16/18

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

BORING B-02

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 10/2/2012 **COMPLETED** 10/2/2012 **GROUND ELEVATION** 848.3 ft **COORDINATES** N 1393958 E 2202119.5

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit; HQ Rock Core **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** R. Tinsley **CHECKED BY** _____ **BORING DEPTH** 54.4 ft.

GROUND WATER DEPTH: DURING 42 ft. **COMP.** _____ **DELAYED** 27.8 ft. after 24 hrs.

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML) - Gravel surface with some vegetation.						
		- brown, medium stiff, SILT with mica and quartz fragments.						
5		- CL-ML: dark red, stiff, SILT/CLAY; micaceous		SS -1	4.5	4-6-9 (15)		2.5YR.
10		- reddish brown, dry, medium stiff, SILT with mica and relict bedding.		SS -2	9.5	4-4-4 (8)		saprolite (gneiss).
15		- medium stiff, SAA with mica, quartz and feldspar; distinct banding		SS -3	14.5	2-3-3 (6)		saprolite.
20		- light yellowish brown, medium stiff, fine to coarse grain, SILT with mica, quartz, and feldspar		SS -4	19.5	1-3-2 (5)		saprolite; distinct color change from red to tan with micas.
25				SS	24.5	2-3-5		

(Continued Next Page)

SOUTHERN COMPANY

BORING B-02

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)* - damp, medium stiff, SAA		-5		(8)		upper saprolite.
		▼						
30				SS -6	29.5	6-15-25 (40)		
		- gray and white, dry, very hard, SILT; gneiss saprolite						lower saprolite.
35				SS -7	34.5	9-27-40 (67)		
		- olive brown, very hard, SAA, more evidence of water (iron) staining; some black specks (manganese?)						2.5Y.
40				SS -8	39.5	50 (0)		
		- pale brown, dry, very hard, pulverized SILT with gneiss fragments						10YR.
		▽						
			804.2	RC -1	44.1			
45		**Gneiss** - dark gray, hard, slightly weathered, augen gneiss with iron staining along partings. - extremely weathered and broken gneiss						H2O on augers when pulled.
		- gray, hard, slightly weathered, staining along vertical fractures						
50				RC -2	49.4			
		- dark gray, weathered augen gneiss and mica schist with chlorite. Quartz layers at 50 ft, 52.8 ft and 54.1 ft.; Deformed and folded about 3 inches.						
		- Schist: hard, slightly weathered, with chlorite						

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:43 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

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SOUTHERN COMPANY

BORING B-02
Page 3 of 3

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

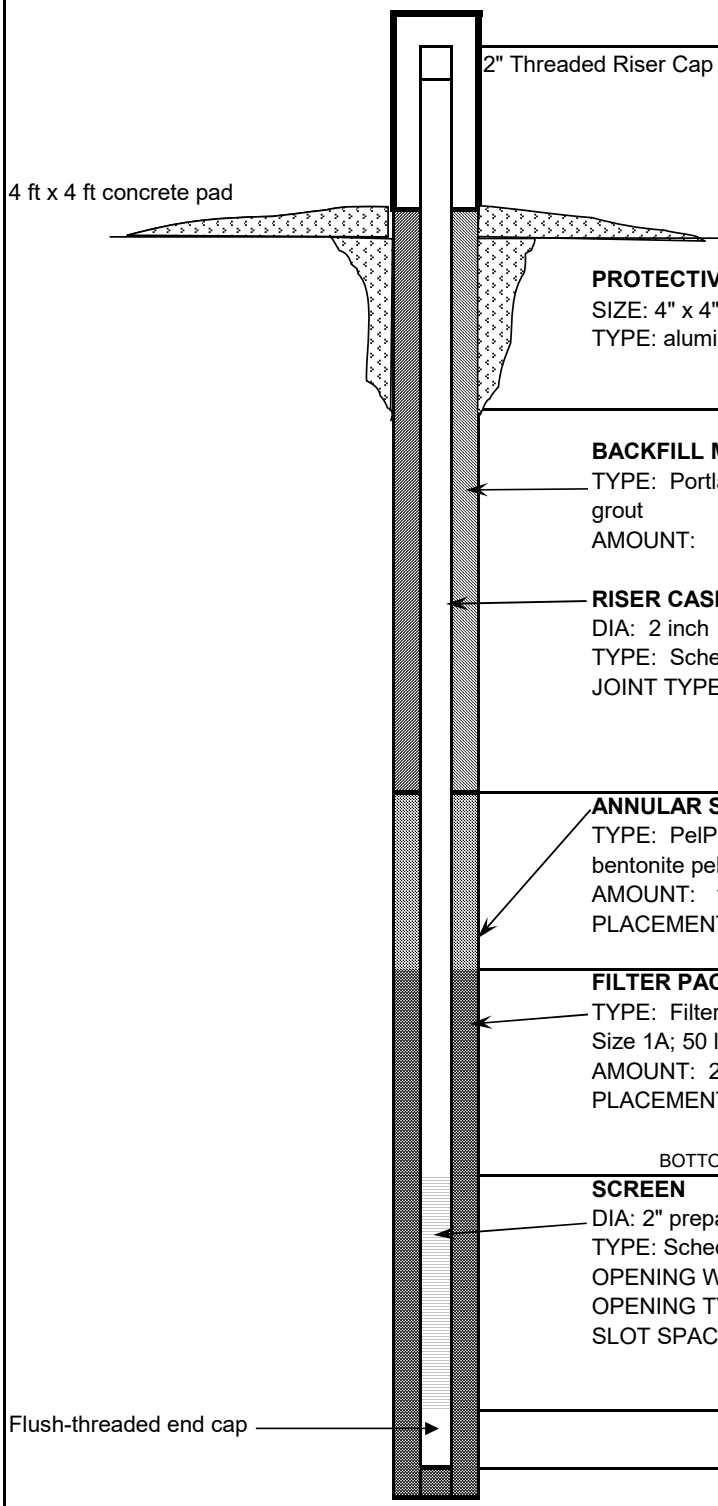
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55		Bottom of borehole at 54.4 feet.	793.9					
60								
65								
70								
75								
80								

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWA-2/B-2
LOGGER: Rhonda Tinsley	DRILLING METHODS: HS Auger/HQ Rock Core	
DATE CONSTRUCTED: 10/2/2012	N: 1393958 E:2202119.5	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.6	850.88
2" Threaded Riser Cap		
GROUND SURFACE	0.0	848.3
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 10 bags cement 4 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	31.0	817.3
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1.75 buckets PLACEMENT: Poured		
TOP OF FILTER PACK	35.1	813.2
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 2.5 Bags PLACEMENT: Poured		
BOTTOM OF RISER / TOP OF SCREEN	38.7	809.7
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	48.7	799.7
BOTTOM OF CASING	49.0	799.3

HOLE DIA: 7 inch (auger)
3.8 inch (HQ core)

SOUTHERN COMPANY

BORING LOG

BORING B-04

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 10/3/2012 **COMPLETED** 10/3/2012 **GROUND ELEVATION** 812.1 ft **COORDINATES** N 1394171.5 E 2202662.4

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** R. Tinsley **CHECKED BY** _____ **BORING DEPTH** 46 ft.

GROUND WATER DEPTH: DURING 23 ft. **COMP.** _____ **DELAYED** 12.2 ft. after 24 hrs.

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML) - Thin topsoil with vegetation. - brown, SILT						
5		- yellowish brown, stiff, SILT saprolite, relic bedding prominent.		SS -1	4.5	3-3-6 (9)		10YR; upper saprolite.
10		- olive gray, medium stiff, SILT saprolite with fine to coarse-grained fragments.		SS -2	9.5	2-3-3 (6)		5YR; lower saprolite.
15		- damp, medium stiff, SAA		SS -3	14.5	2-2-4 (6)		
20		- wet, hard, SAA		SS -4	19.5	6-12-23 (35)		WT @ 23'.
25				SS	24.5	6-11-12		

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:43 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

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SOUTHERN COMPANY

BORING LOG

BORING B-04

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

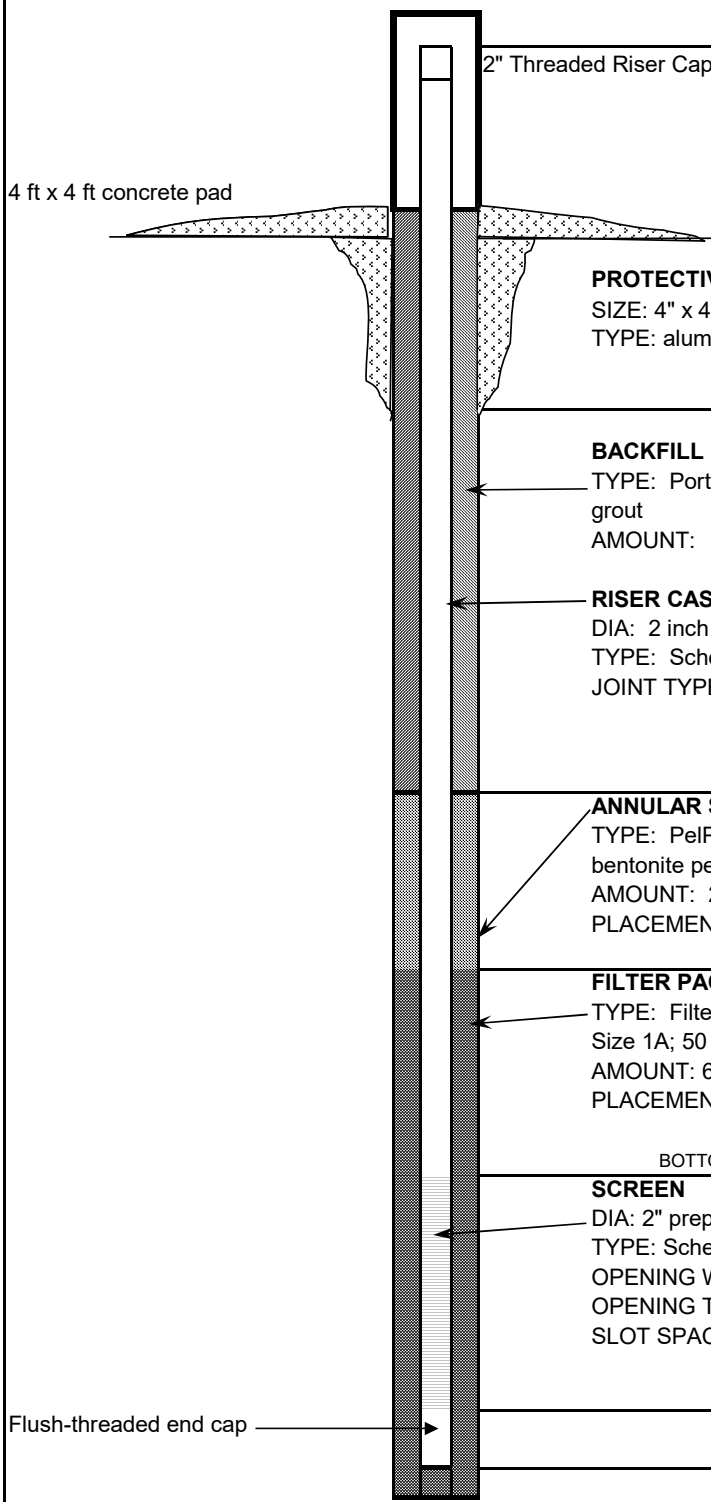
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)*		-5		(23)		
		- very stiff, SAA						
30				SS -6	29.5	10-18-23 (41)		
		- hard, SAA						
35				SS -7	34.5	6-11-13 (24)		
		- very stiff, SAA						
40				SS -8	39.5	5-6-5 (11)		
		- stiff, SAA						
45				SS -9	44.5	25-45 (45)		
		- hard, SAA	766.1					
		Bottom of borehole at 46.0 feet.						
50								

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-4/B-4
LOGGER: Rhonda Tinsley	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 10/3/2012	N: 1394171.5 E:2202662.4	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.8	814.85
GROUND SURFACE	0.0	812.1
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 6 bags cement 9 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	27.0	785.1
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 2.25 buckets PLACEMENT: Poured		
TOP OF FILTER PACK	31.0	781.1
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 6.5 Bags PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	34.7	777.5
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	44.7	767.5
BOTTOM OF CASING	45.0	767.1

Location resurveyed June - July 2020

BORING B-05

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 10/3/2012 **COMPLETED** 10/4/2012 **GROUND ELEVATION** 788.7 ft **COORDINATES** N 1394306.3 E 2202965.1

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit; HQ Rock Core **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** R. Tinsley **CHECKED BY** _____ **BORING DEPTH** 30 ft.

GROUND WATER DEPTH: DURING 16 ft. **COMP.** _____ **DELAYED** 0 ft. after 100 hrs.

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML) - reddish brown, SILT						
			784.2	SS -1	4.5	WH-WH-WH (0)		
5		**Silty Sand (SM)** - olive gray, damp, very loose, silty SAND to sandy SILT						
			779.2	SS -2	9.5	WH-WH-WH (0)		
10		**Silt (ML)** - yellowish to light brown, damp, very soft, SILT with mica (gneiss)						upper saprolite.
				SS -3	14.5	2-2-4 (6)		
15		- greenish gray, wet, medium stiff, sandy SILT saprolite with relic structure (gneiss). ▽						lower saprolite.
				SS -4	19.5	1-2-3 (5)		
20		- medium stiff, SAA						lower saprolite.
				SS	24.5	50		
25		- very hard, SAA; slightly less weathered.						

(Continued Next Page)

SOUTHERN COMPANY

BORING LOG

BORING B-05
Page 2 of 2

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

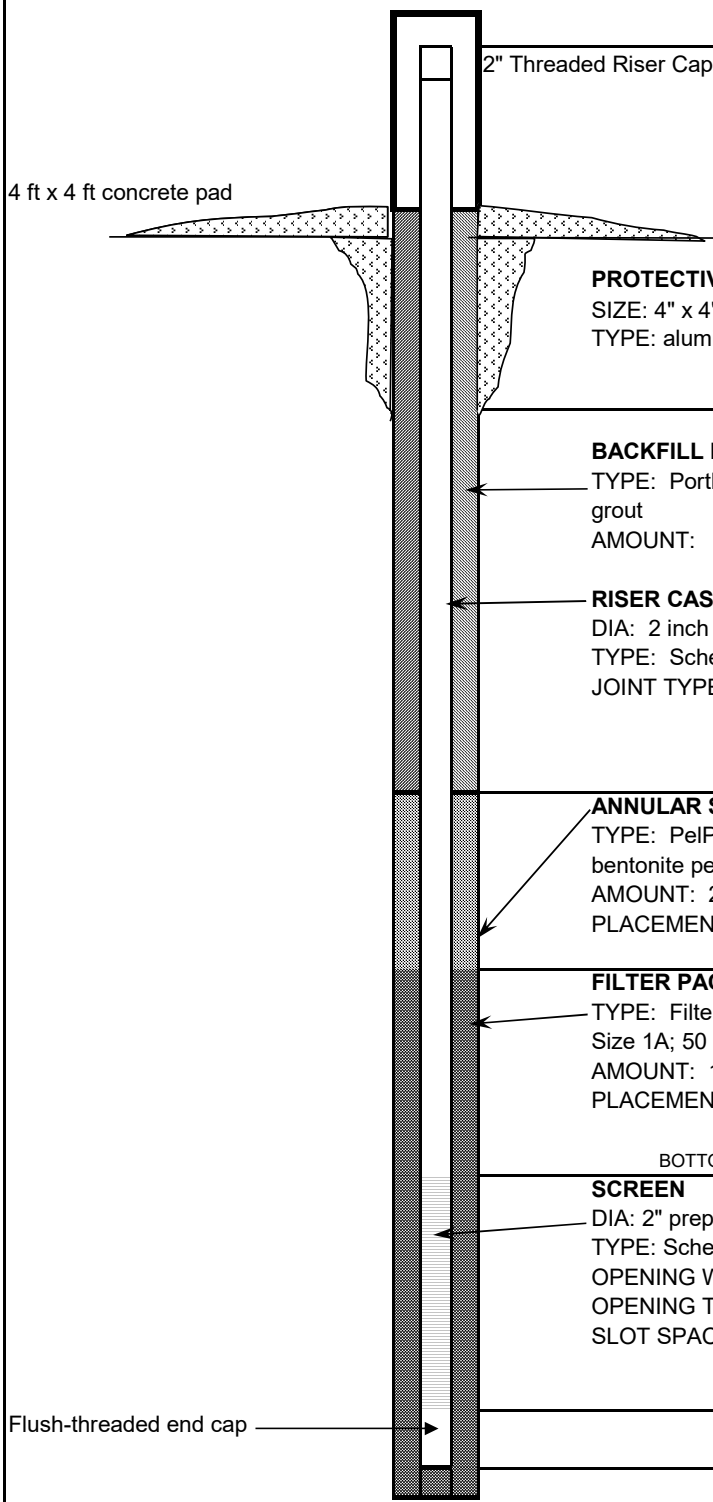
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
			763.3	-5 RC -1	24.9	(0)		lower saprolite.
		Gneiss - black (biotite) and white, hard, slightly weathered, AUGEN GNEISS with water staining along foliations (approx. 45 degrees).						
30			758.7					
		Bottom of borehole at 30.0 feet.						
35								
40								
45								
50								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:43 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	
LOGGER: Rhonda Tinsley	DRILLING METHODS: HS Auger/HQ Rock Core	DGWC-5/B-5
DATE CONSTRUCTED: 10/4/2012	N: 1394306.3 E:2202965.1	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-3.0	791.75
2" Threaded Riser Cap		
GROUND SURFACE	0.0	788.7
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 5 bags cement 7 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	12.0	776.7
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 2 buckets PLACEMENT: Tremie		
TOP OF FILTER PACK	16.0	772.7
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 1.5 Bags PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	19.7	769.1
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	29.7	759.1
BOTTOM OF CASING	30.0	758.7

HOLE DIA: 7 inch (auger)
3.8 inch (HQ core)

BORING B-08

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 10/10/2012 **COMPLETED** 10/10/2012 **GROUND ELEVATION** 824.1 ft **COORDINATES** N 1394322.2 E 2203882.1

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** G. Dyer **CHECKED BY** _____ **BORING DEPTH** 49.1 ft.

GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** 17.04 ft. after 18 hrs.

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)						
5		- tan-brown, dry, very soft, clayey SILT; micaceous; contains little quartz sand, no relic structures; 85% silt, 10% clay, 5% sand		SS -1	4.5	WH-WH-WH (0)		residual soil.
10		- tan to reddish brown, dry, medium stiff, clayey SILT; contains mica flakes and trace quartz sand; higher iron content and soil bonding; no relic structures		SS -2	9.5	3-3-5 (8)		residual soil.
15		- red-brown, damp, soft, clayey SILT; micaceous; contains trace of schist-derived gravel; higher clay percent, more plastic		SS -3	14.5	WH-1-2 (3)		residual soil.
20		- olive brown with black streaks and white layer, damp, very stiff, sandy SILT with clay; very micaceous; highly weathered original structure; contains sand and gravel derived from gneiss and a white bleached quartz lense		SS -4	19.5	20-16-10 (26)		transition to upper saprolite and higher moisture content.
25				SS	24.5	5-7-6		

(Continued Next Page)

SOUTHERN COMPANY

BORING LOG

BORING B-08

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

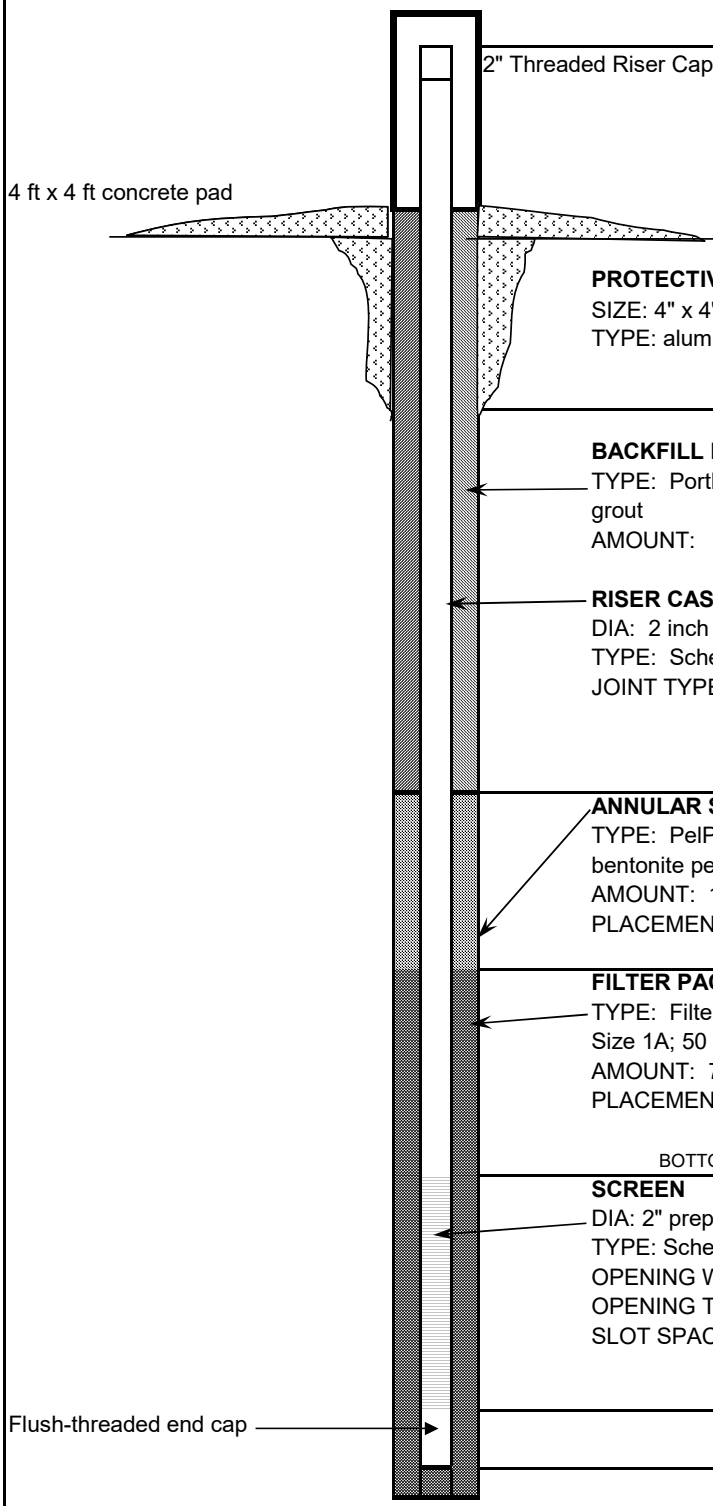
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)* - stiff, SAA; more coarse-grained sediment; coarse material is angular; less competent than above; some highly weathered relict structure		-5		(13)		starting to get H2O return to surface.
30		- very hard, SAA; more competent; rock fragments less weathered		SS -6	29.5	9-10-50 (60)		transition to lower saprolite.
35		- brown-black, damp, hard, gravelly SILT; contains highly to partially weathered relict gneiss fragments; micaceous; contains manganese streaks		SS -7	34.5	5-15-18 (33)		less weathered rock; again becoming partially weathered.
40		- brown black, damp, very hard, sandy SILT with gravel; contains black manganese, red iron and weathered quartz zones; less gneissic gravel than above; micaceous		SS -8	39.5	11-12-50 (62)		fewer rock fragments.
45		**Silty Gravel (GM)** - brown, tan and black, damp, very dense, silty GRAVEL; predominately weathered to partially weathered gneiss fragments	779.6 775.0	SS -9	44.5	17-50 (50)		transitioning to partially weathered rock.
50		Bottom of borehole at 49.1 feet.						

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-8/B-8
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 10/10/2012	N: 1394322.2 E:2203882.1	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.3	826.38
2" Threaded Riser Cap		
GROUND SURFACE	0.0	824.1
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 6.25 bags cement 9 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	34.8	789.3
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Tremie w/water		
TOP OF FILTER PACK	36.8	787.3
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 7 Bags PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	38.7	785.4
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	48.7	775.4
BOTTOM OF CASING	49.1	775.0

SOUTHERN COMPANY

BORING LOG

BORING B-09

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 10/10/2012 **COMPLETED** 10/10/2012 **GROUND ELEVATION** 821.8 ft **COORDINATES** N 1394055.9 E 2204170

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** G. Dyer **CHECKED BY** _____ **BORING DEPTH** 30.1 ft.

GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** 7.2 ft. after 15 hrs.

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)						no residual soil; low area previously excavated..
5		- red-brown, dry, stiff, fine SILT; relict schistose structures; soil is bonded and moderately competent but rubs to fine silt or clay		SS -1	4.5	4-6-9 (15)		upper saprolite.
10		- brown-tan, dry, very stiff, gravelly SILT; relic schistose or gneissic structure; rock fragments are more competent; rubs to fine silt with clay; contains manganese nodules and iron staining		SS -2	9.5	4-9-9 (18)		transition to lower saprolite.
15		- very stiff, SAA		SS -3	14.5	6-10-12 (22)		lower saprolite.
20		- very hard, SAA		SS -4	19.5	16-34-32 (66)		lower saprolite.
25		**Silty Gravel (GM)**	797.3	SS	24.5	51-15-25		

(Continued Next Page)

SOUTHERN COMPANY

BORING B-09

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

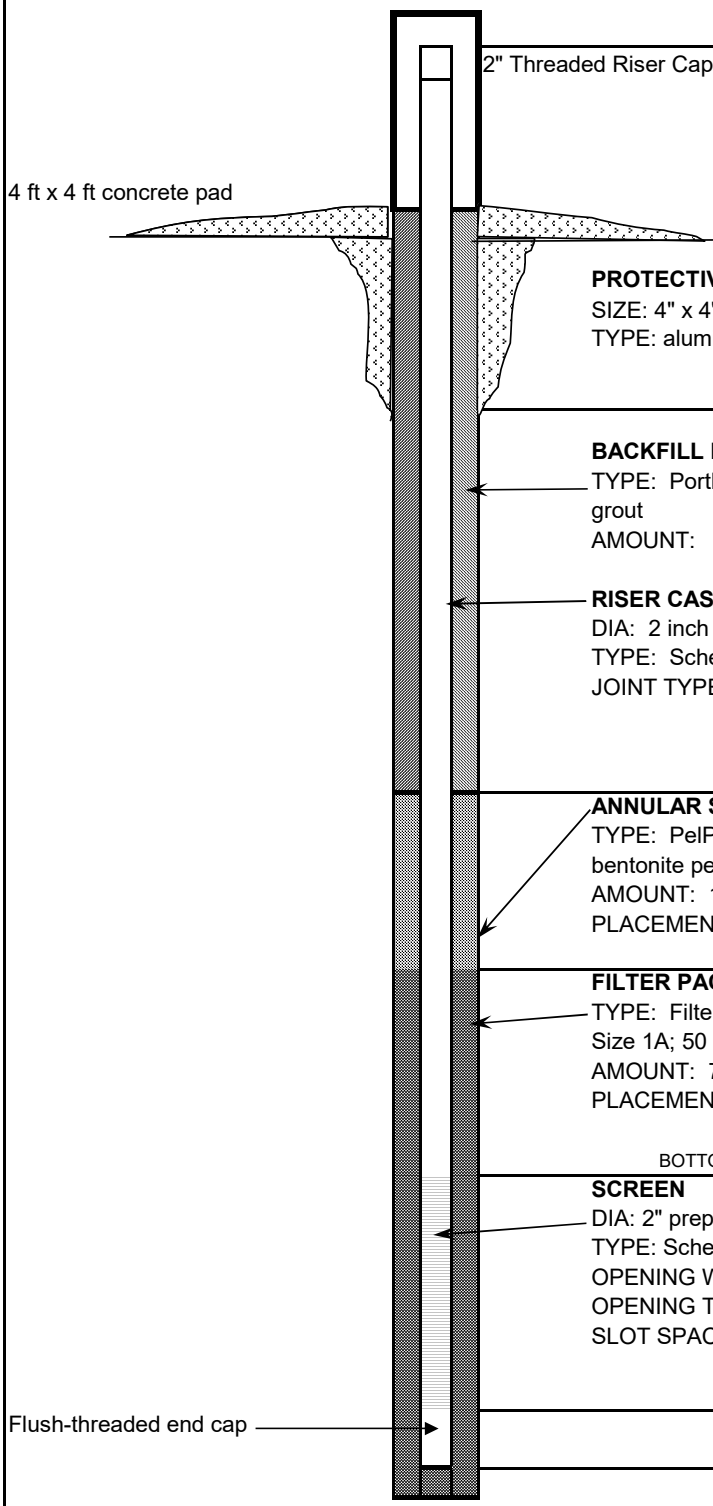
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silty Gravel (GM)*(con't)* - brown-black, damp, hard, silty GRAVEL; contains few rock fragments; crumbles to gravely silt to silty gravel; manganese staining		-5		(40)		H2O return when pulling augers.
30			791.7	SS -6	29.5	50 (0)		
		- very hard, partially weathered rock; schist fragments; crumbles to gravel with minor silt; micaceous Bottom of borehole at 30.1 feet.						
35								
40								
45								
50								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-9/B-9
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 10/10/2012	N: 1394055.9 E:2204170	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.6	824.35
2" Threaded Riser Cap		
GROUND SURFACE	0.0	821.8
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 5 bags cement 7 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	15.0	806.8
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	17.5	804.3
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 7 Bags PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	19.6	802.2
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	29.6	792.2
BOTTOM OF CASING	30.0	791.8

SOUTHERN COMPANY

BORING LOG

BORING B-10

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 10/11/2012 **COMPLETED** 10/11/2012 **GROUND ELEVATION** 820.9 ft **COORDINATES** N 1393818.3 E 2204201.1

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** G. Dyer **CHECKED BY** _____ **BORING DEPTH** 46 ft.

GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** _____

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)						
5		- red to red-brown, soft, fine SILT with clay; sparse mica flakes; few angular to sub-angular quartz grains; soil is moderately well bonded		SS -1	4.5	2-2-2 (4)		residual soil.
10		- tan-brown with black streaks, dry, medium stiff, fine SILT with fine to medium-grained sand and gravel; contains few quartz gravels and highly weathered mica; rubs to silt and fine to medium-grained sand; manganese staining		SS -2	9.5	2-4-4 (8)		residual soil.
15		- stiff, SAA; less sand and gravel; better cemented/bonded		SS -3	14.5	3-4-5 (9)		
20		- medium stiff, SAA; softer		SS -4	19.5	1-2-4 (6)		
25				SS	24.5	2-3-4		

(Continued Next Page)

SOUTHERN COMPANY

BORING LOG

BORING B-10

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

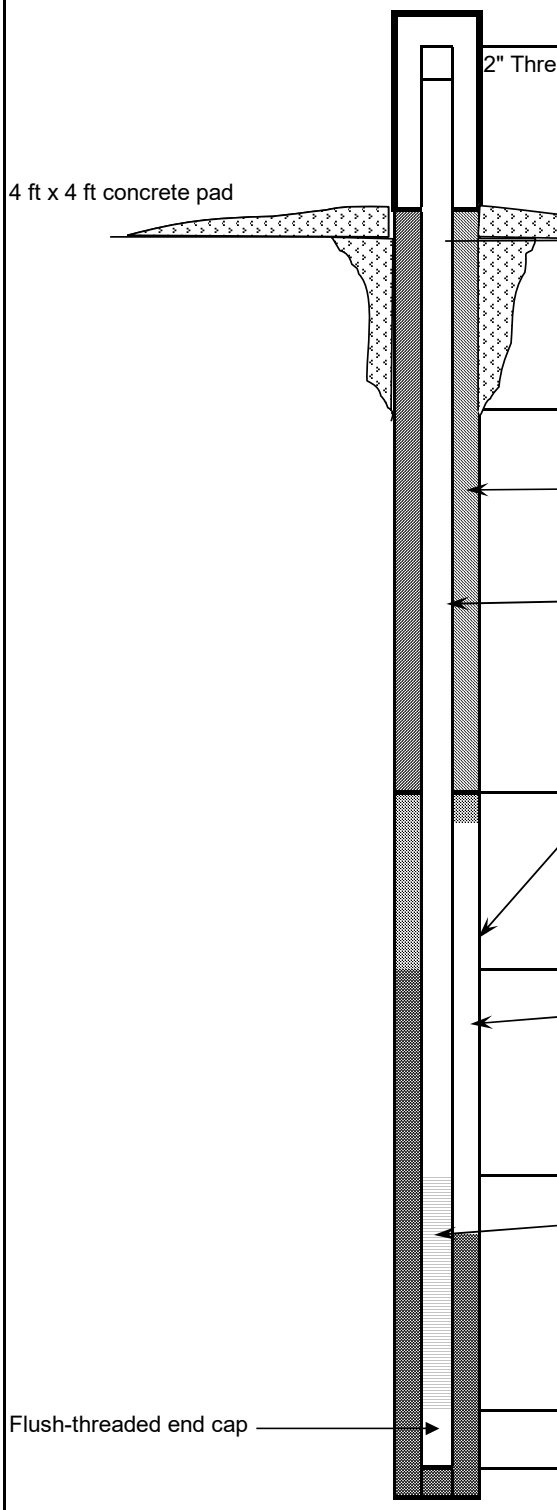
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)*		-5		(7)		
		- very damp, medium stiff, SAA						
30				SS -6	29.5	4-5-5 (10)		
		- stiff, SAA; contains highly weathered schist fragments						upper saprolite.
35				SS -7	34.5	7-8-9 (17)		
		- brown, very damp, very stiff, gravelly SILT wtih clay; contains highly weathered schist fragments; samples crumble and rub to clayey silt.						upper saprolite.
40				SS -8	39.5	6-12-16 (28)		
		- hard, SAA; more rock fragments; less weathered						lower saprolite.
45				SS -9	44.5			
		- wet, hard, gravelly SILT; prevalent relict structures	774.9					lower saprolite.
		Bottom of borehole at 46.0 feet.						
50								

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-10/B-10
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 10/11/2012	N: 1393818.3 E:2204201.1	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.6	823.55
2" Threaded Riser Cap		
GROUND SURFACE	0.0	820.9
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 6 bags cement 9 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	29.8	791.1
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	32.1	788.8
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 6.75 Bags PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	35.0	785.9
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	45.0	775.9
BOTTOM OF CASING	45.4	775.5

SOUTHERN COMPANY

BORING LOG

BORING B-11

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 10/15/2012 **COMPLETED** 10/15/2012 **GROUND ELEVATION** 798.1 ft **COORDINATES** N 1393547.1 E 2204166.2

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** C. Sellers **CHECKED BY** _____ **BORING DEPTH** 51 ft.

GROUND WATER DEPTH: DURING 25 ft. **COMP.** _____ **DELAYED** _____

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)						
5		- brownish red, medium stiff, fine SILT with clay; micaceous; slightly bonded		SS -1	4.5	2-3-4 (7)		
10		- brownish red, very stiff, fine SILT with clay; very micaceous; 10% clay		SS -2	9.5	12-12-15 (27)		
15		- damp, stiff, SAA; 20% clay; contains small schist gravel		SS -3	14.5	5-6-6 (12)		
20		- tan, damp, stiff, SAA		SS -4	19.5	4-5-7 (12)		
25		▽		SS	24.5	5-8-11		

(Continued Next Page)

SOUTHERN COMPANY

BORING LOG

BORING B-11

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

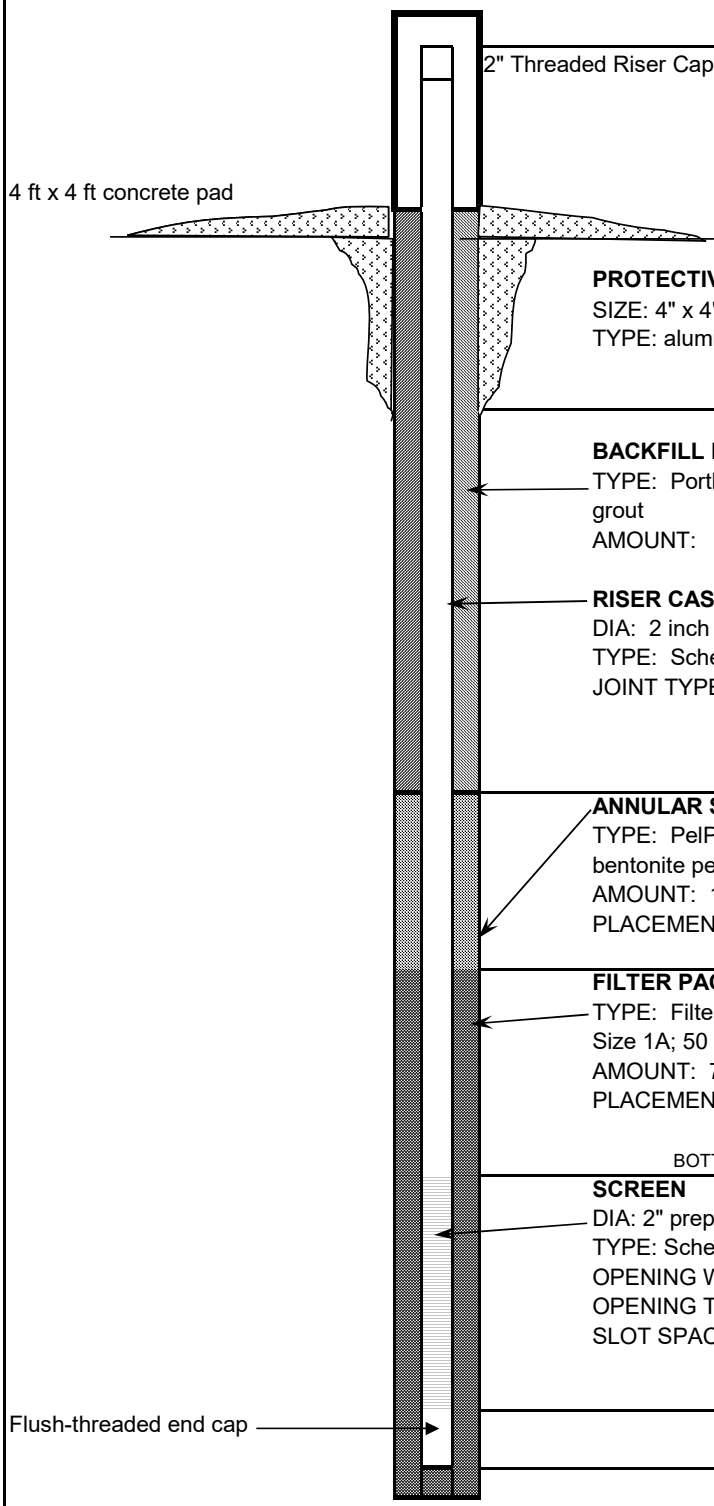
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)*		-5		(19)		
		- light tan, wet, very stiff, SAA; contains fine sand and small schist fragments						
30				SS -6	29.5	5-6-8 (14)		
		- stiff, SAA						
35				SS -7	34.5	6-8-14 (22)		
		- very stiff, SAA						
40				SS -8	39.5	12-20-25 (45)		
		- hard, SAA						
45				SS -9	44.5	26-50 (50)		
		- gray, very hard, SAA; contains schist gravel throughout						
50				SS -10	49.5	50 (0)		
		- dark gray, very hard, SAA	747.1					
		Bottom of borehole at 51.0 feet.						

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	
LOGGER: C. Sellers/K. Byrd	DRILLING METHODS: HS Auger	DGWC-11/B-11
DATE CONSTRUCTED: 10/15/2012	N: 1393547.1 E:2204166.2	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.5	800.57
2" Threaded Riser Cap		
GROUND SURFACE	0.0	798.1
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 7 bags cement 10.5 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	33.9	764.2
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	36.2	761.9
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 7 Bags PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	38.8	759.3
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	48.8	749.3
BOTTOM OF CASING	49.1	749.0

Location resurveyed June - July 2020

SOUTHERN COMPANY

BORING LOG

BORING B-12
Page 1 of 2

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 10/15/2012 **COMPLETED** 10/15/2012 **GROUND ELEVATION** 771.2 ft **COORDINATES** N 1393149.4 E 2204128.3

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** K. Byrd **CHECKED BY** _____ **BORING DEPTH** 26 ft.

GROUND WATER DEPTH: DURING 9 ft. **COMP.** _____ **DELAYED** _____

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)						
5		- brown/tan, damp, soft, SILT with some clay; micaceous		SS -1	4.5	1-2-2 (4)		
				UD -1	7.0			
		▽	761.7	SS -2	9.5	WH-WH-WH (0)		
10		**Lean Clay (CL)** - red/orange/light brown, wet, very soft, CLAY; contains sparse mica and fine sand grains						
			756.7	SS -3	14.5	WH-WH-7 (7)		
15		**Silt (ML)** - yellowish orange, wet, medium stiff, sandy SILT; very fine-grained						
20		- light to olive gray, wet, very stiff, SILT; micaceous; contains heavily weathered schist fragments		SS -4	19.5	6-11-8 (19)		
25			746.2	SS	24.5	2-2-3		

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SOUTHERN COMPANY

BORING LOG

BORING B-12

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

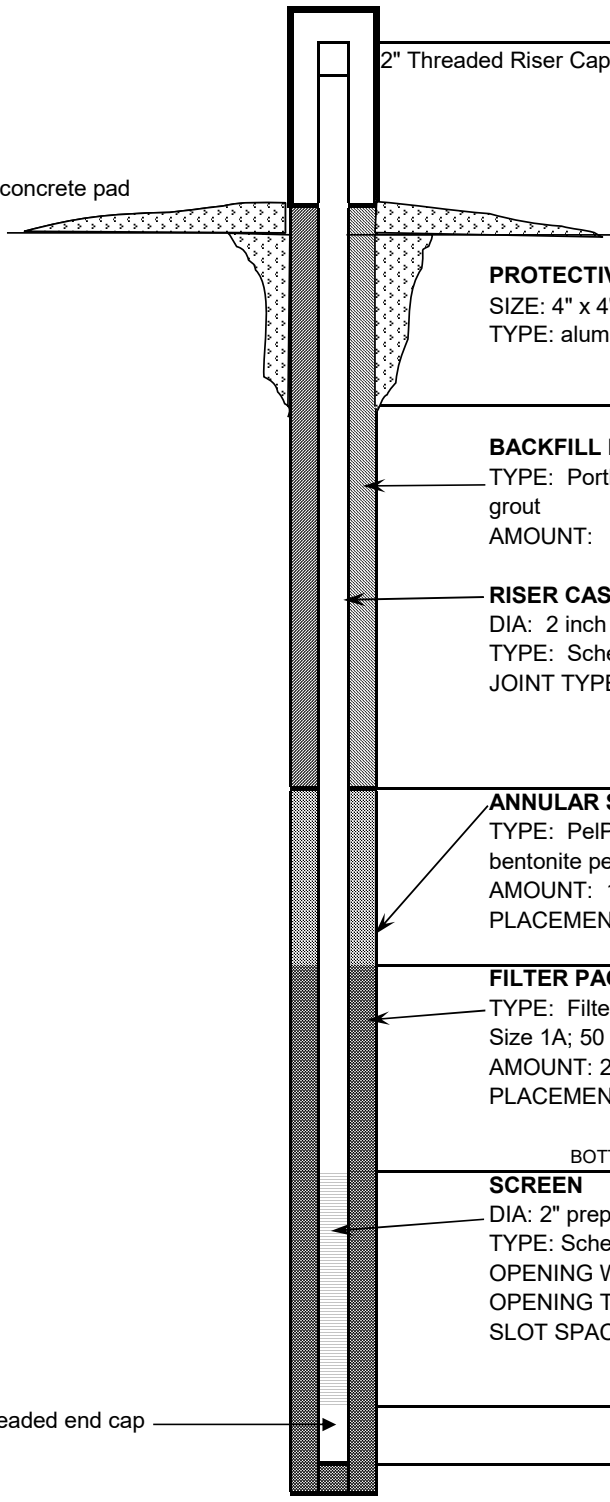
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- yellowish orange, damp, medium stiff, clayey SILT; micaceous	-5			(5)		
		Bottom of borehole at 26.0 feet.						

30
35
40
45
50

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	
LOGGER: Kinsey Byrd	DRILLING METHODS: HS Auger	DGWC-12/B-12
DATE CONSTRUCTED: 10/15/2012	N: 1393149.4 E:2204128.3	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.7	773.86
2" Threaded Riser Cap		
GROUND SURFACE	0.0	771.2
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 4 bags cement 6 lbs bentonite **RISER CASING** DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	10.2	761.0
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	12.6	758.6
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 2.5 Bags; 50 lbs/bag PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	14.7	756.5
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	24.7	746.5
BOTTOM OF CASING	25.1	746.1

Location resurveyed June - July 2020

SOUTHERN COMPANY

BORING LOG

BORING B-13
Page 1 of 2

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 11/27/2012 **COMPLETED** 11/27/2012 **GROUND ELEVATION** 791.3 ft **COORDINATES** N 1392881.1 E 2204084.6

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** G. Dyer **CHECKED BY** _____ **BORING DEPTH** 46 ft.

GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** 26.73 ft. after 36 hrs.

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 9.0 ft						
10		**Silt (ML)** - tan-brown, dry, very hard, SILT; saprolite (weathered schist); intact relict schistosity	781.8	SS -1	9.5	21-50 (50)		
15		- mottled tan, brown and red with black manganese staining, dry, very hard, clayey SILT; saprolite		SS -2	14.5	18-30-50 (80)		
20		- damp, hard, SAA		SS -3	19.5	6-14-26 (40)		
25				SS	24.5	12-22-31		

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

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SOUTHERN COMPANY

BORING LOG

BORING B-13

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

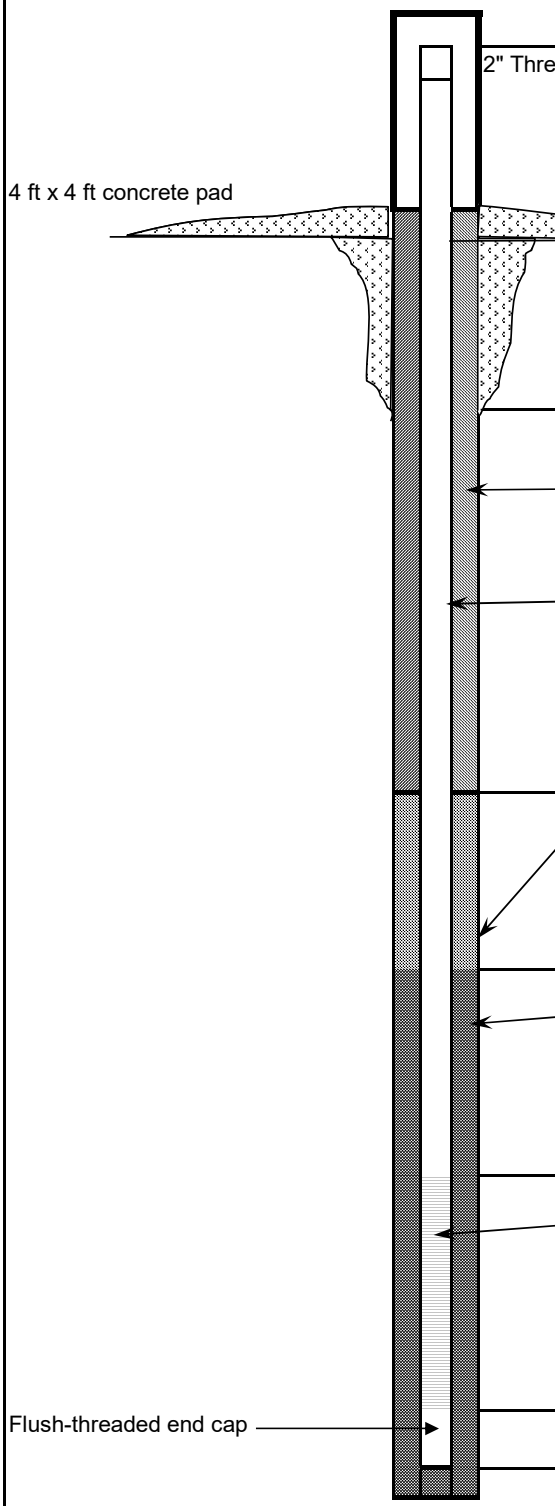
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)*		-4		(53)		
		- SAA						
		▼						
				SS -5	29.5	14-20-28 (48)		
30		- SAA						
				SS -6	34.5	12-50 (50)		
35		- moist, very hard, SAA with more competent schist fragments						
				SS -7	39.5	18-29-50 (79)		
40		- very hard, SAA; more sandy silt and less schist fragments						
				SS -8	44.5	50 (0)		saprock/top of rock transition.
45		- gray-brown, saprock/pwr; limited recovery as top of rock was encountered	745.3					
		Bottom of borehole at 46.0 feet.						
50								

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-13/B-13
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 11/29/2012	N: 1392881.1 E:2204084.6	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.8	794.1
2" Threaded Riser Cap		
GROUND SURFACE	0.0	791.3
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 14 bags cement 14 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	29.0	762.3
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	31.2	760.1
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 7 Bags PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	33.4	757.9
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	43.4	747.9
BOTTOM OF CASING	43.8	747.5

SOUTHERN COMPANY

BORING LOG

BORING B-14

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 12/18/2012 **COMPLETED** 12/18/2012 **GROUND ELEVATION** 789.8 ft **COORDINATES** N 1392574.2 E 2204013.3

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit; HQ Rock Core **EQUIPMENT** CME 550

DRILLED BY T. Milam **LOGGED BY** G. Dyer **CHECKED BY** _____ **BORING DEPTH** 34.3 ft.

GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** _____

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 9.0 ft						
			780.8					
10		**Silt (ML)** - tan with green and red-orange mottling, damp, soft, SILT; trace of schistose bedding; trace schist fragments; slightly micaceous and quartzose		SS -1	9.5	1-2-2 (4)		residual soil. upper saprolite.
15		- brown and tan-red, dry, hard, SILT; consolidated and slightly hard; relict schistose bedding; trace schist fragments		SS -2	14.5	9-15-21 (36)		lower saprolite.
			770.3					
20		**Silty Gravel (GM)** - brown, tan and silver, dry, very hard, SAPROCK; predominately schist fragments; moderately weathered		SS -3	19.5	16-50 (50)		saprock/pwr.
		- SAA; softer zone from 23' to 24'						
			765.5					
25		**Schist**		SS	24.5	50		

(Continued Next Page)

SOUTHERN COMPANY

BORING LOG

BORING B-14

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation

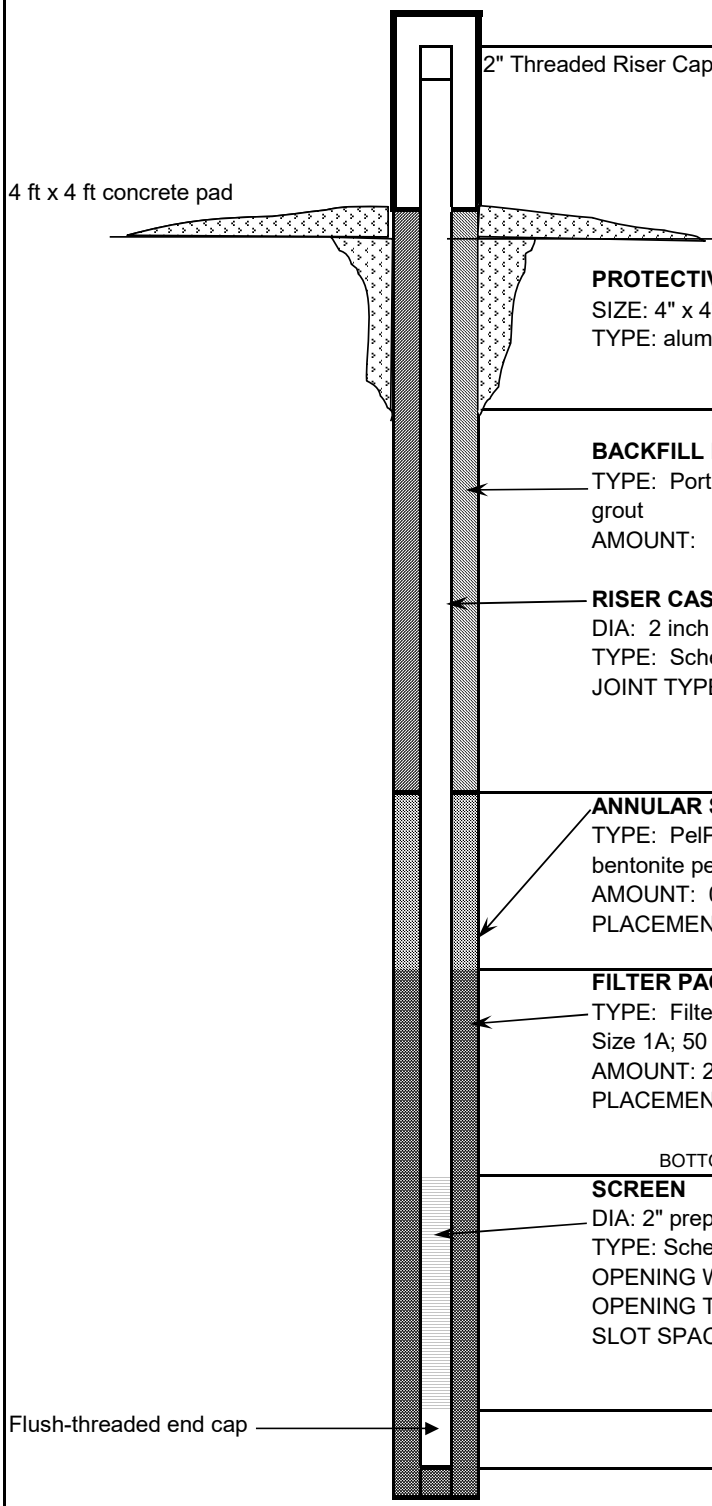
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- green, silver, black and white, BUTTON MICA SCHIST; heavily fractured; iron-staining; quartz banding; sheared foliations **Schist***(con't)* - gray, silver and black, SCHIST; fractured; iron staining; feldspar augens; shear foliation less common		-4		(0)		prevalent iron-staining and manganese oxides. black dike or mylonite cross-cuts schist @ 45 degrees at 27.5'.
30		- green, silver, black and white, BUTTON MICA SCHIST; heavily fractured; prevalent iron-staining; feldspar augens; sheared	758.9					
		- gray, MYLONITE; micaceous; slightly to moderately fractured; pyrite observed	755.5					
35		Bottom of borehole at 34.3 feet.						
40								
45								
50								

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: T. Milam	
LOCATION: Ash Pond	RIG TYPE: CME550	
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger/HQ Rock Core	DGWC-14/B-14
DATE CONSTRUCTED: 12/18/2012	N: 1392574.2 E:2204013.3	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.6	792.4
GROUND SURFACE	0.0	789.8
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 24 bags cement 30 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	12.5	777.3
ANNULAR SEAL TYPE: PelPlug TR-30 1/4" bentonite pellets; 5-gallon buckets AMOUNT: 0.75 bucket PLACEMENT: Poured/tremie pipe		
TOP OF FILTER PACK	15.5	774.3
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 2 Bags PLACEMENT: poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	23.9	765.9
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	33.9	755.9
BOTTOM OF CASING	34.3	755.5

HOLE DIA: 7 inch (auger)
3.8 inch (HQ core)

SOUTHERN COMPANY

BORING LOG

BORING B-15
Page 1 of 3

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 11/29/2012 **COMPLETED** 11/29/2012 **GROUND ELEVATION** 821.5 ft **COORDINATES** N 1392544.1 E 2203679

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** G. Dyer **CHECKED BY** _____ **BORING DEPTH** 67.2 ft.

GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** _____

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 9.0 ft						
			812.5					
10		**Silt (ML)** - tan-red, dry, soft, SILT; about 3% clay; few schistose rock fragments; slightly micaceous		SS -1	9.5	2-1-2 (3)		residual soil.
15		- light tan, dry, medium stiff, SILT; homoeneous silt (no clay or sand); slightly micaceous; trae gneiss fragments near base of sample		SS -2	14.5	2-3-4 (7)		residual soil.
20		- gray to brown, dry, very hard, crumbles to sandy SILT; saprolite; fragmented soil largely consistent of moderately to highly weathered rock		SS -3	19.5	19-35-38 (73)		
25				SS	24.5	14-24-27		

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

(Continued Next Page)

SOUTHERN COMPANY

BORING LOG

BORING B-15

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)* - green to dark tan, dry, very hard, crumbles to SILT with fine sand; relict schitose structure; lacks competent schist fragments; micaceous; trace quartz sand (about 5%)		-4		(51)		lower saprolite.
30				SS -5	29.5	14-25-22 (47)		
		- tan to gray with black manganese, dry, hard, crumbles to sandy SILT; relict schistosity; more prevalent quartz (about 10%); slightly micaceous						lower saprolite.
35				SS -6	34.5	12-20-16 (36)		
		- olive green, tan and silver, dry, hard, crumbles to SILT with schist derived gravel; large mica flakes; trace fine quartz sand						lower saprolite.
40				SS -7	39.5	14-36-50 (86)		
		- olive green, tan and silver, moist, very hard, crumbles to SILT with clay; very micaceous; relict schitose structure; moderately weathered schist fragments						lower saprolite.
45		**Silty Gravel (GM)** - olive green, tan and black, moist, very hard, crumbles to silty GRAVEL; less weathered schist fragments	777.0	SS -8	44.5	50 (0)		transition from saprolite to saprock.
50		**Silt (ML)** - olive to dark green and silver, damp, hard, crumbles to SILT with gravel and clay; relict schist structure and fragments	772.0	SS -9	49.5	14-21-26 (47)		lower saprolite.

(Continued Next Page)

SOUTHERN COMPANY

BORING LOG

BORING B-15

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

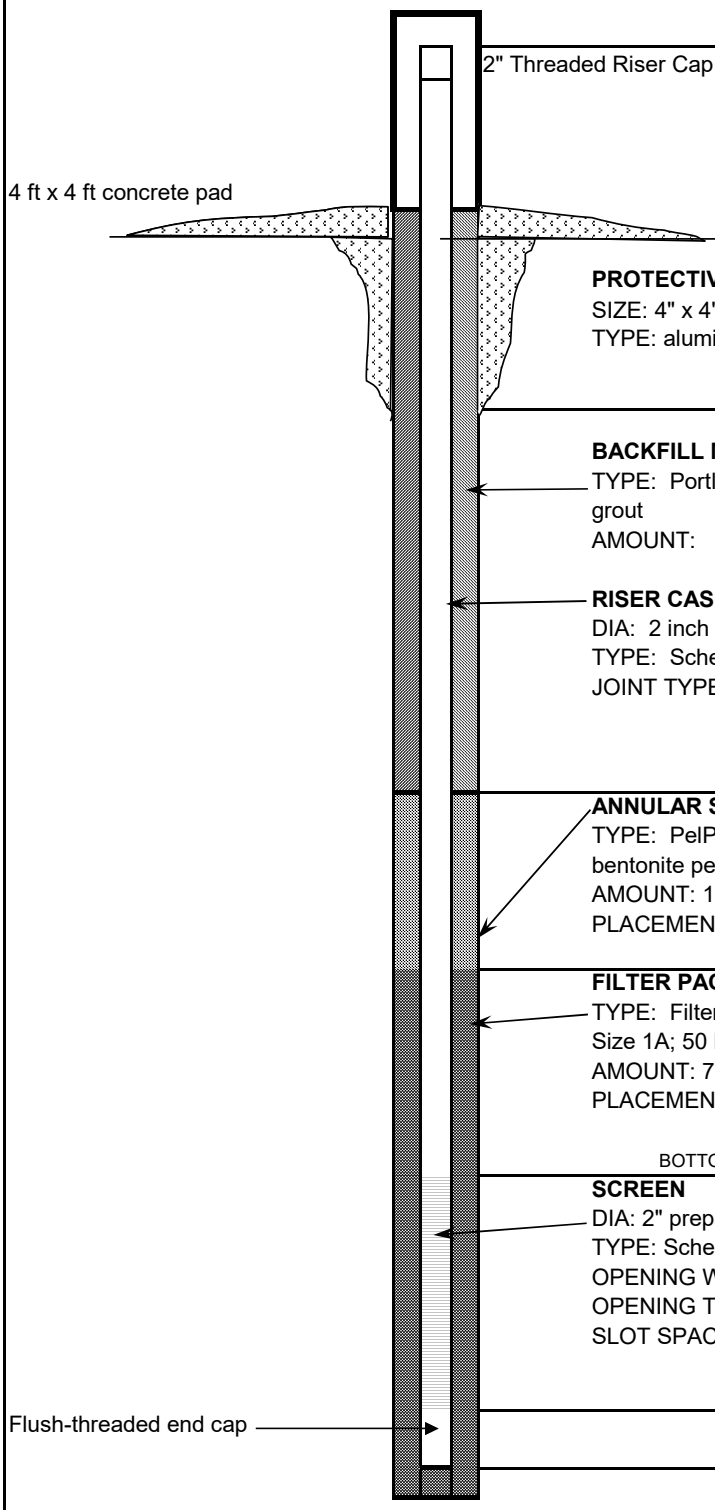
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55		**Silty Gravel (GM)**	767.0	SS -10	54.5	50 (0)		more competent saprock.
		- dark green and black, damp, very hard, weathered schist GRAVEL						
60		- very hard, SAA; damp to dry		SS -11	59.5	50 (0)		
65		- very hard, SAA		SS -12	64.5	50 (0)		
			754.3					
		Bottom of borehole at 67.2 feet.						
70								
75								
80								

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-15/B-15
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 11/29/2012	N: 1392544.1 E:2203679.0	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-3.0	824.5
2" Threaded Riser Cap		
GROUND SURFACE	0.0	821.5
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 13 bags cement 17.5 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	52.4	769.1
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	54.5	767.0
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 7 Bags PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	56.7	764.8
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	66.7	754.8
BOTTOM OF CASING	67.1	754.4

BORING B-17

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 1/9/2012 **COMPLETED** 1/9/2012 **GROUND ELEVATION** 834.2 ft **COORDINATES** N 1392645.6 E 2203051

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** G. Dyer **CHECKED BY** _____ **BORING DEPTH** 46 ft.

GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** _____

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 15.0 ft						
15			819.2	SS -1	15.0	2-2-3 (5)		residual soil.
		Silt (ML) - brown to brown tan, damp, medium stiff, SILT with fine sand and clay; micaceous; contains black manganese oxides; trace quartz sand						
20		- brown, damp, stiff, SILT with clay; highly weathered relict structure; micaceous; trace manganese oxides		SS -2	19.5	4-6-9 (15)		upper saprolite.
25				SS	24.5	3-5-6		

(Continued Next Page)

SOUTHERN COMPANY

BORING LOG

BORING B-17

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

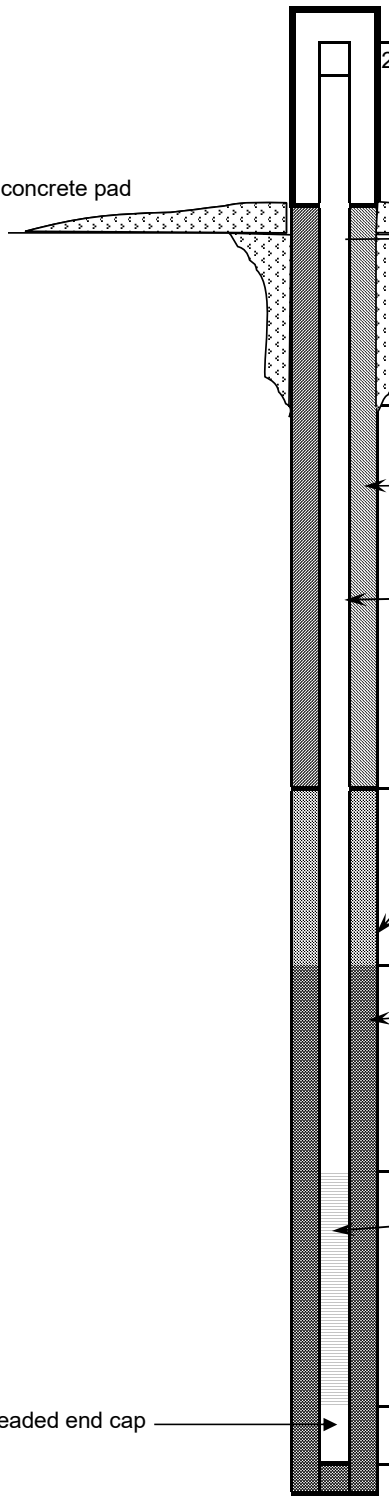
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)*		-3		(11)		upper saprolite.
		- tand and green, damp, stiff, highly weathered relic structure; micaceous						
30				SS -4	29.5	2-3-6 (9)		
		- green to mottled green, black, yellow and tan, wet, stiff, SILT with fine sand; trace unweathered quartz gravel within weathered relic structure; heavy manganese oxide staining; micaceous						upper saprolite.
35				SS -5	34.5	4-6-9 (15)		
		- wet, stiff, SAA; more cemented; trace pyrite in/around weathered zones						
40				SS -6	39.5	19-50 (50)		
		- dark green and tan, very moist, very hard, SILT with gravel; micaceous; quartz sand; relict structures intact; trace manganese oxides; highly to slightly weathered schist fragments						lower saprolite.
45				SS -7	44.5	16-19-20 (39)		
		- green-gray, very moist, hard, SILT with clay; micaceous; trace quartz sand; relict structures but highly weathered; black manganese oxides	788.2					lower saprolite.
		Bottom of borehole at 46.0 feet.						
50								

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-17/B-17
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 1/9/2013	N: 1392645.6 E:2203051.0	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.8	837.05
2" Threaded Riser Cap		
GROUND SURFACE	0.0	834.2
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 20 bags cement 30.5 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	30.0	804.2
ANNULAR SEAL TYPE: PelPlug TR-30 1/4" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	32.0	802.2
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 0.5 Bag filter pac 6.25 bag hole PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	34.2	800.0
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	44.2	790.0
BOTTOM OF CASING	44.5	789.7

HOLE DIA: 7 inch

BORING B-19

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 3/12/2013 **COMPLETED** 3/12/2013 **GROUND ELEVATION** 822.9 ft **COORDINATES** N 1392342.6 E 2202601

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** B. Gallagher **CHECKED BY** _____ **BORING DEPTH** 41 ft.

GROUND WATER DEPTH: DURING _____ **COMP.** 28 ft. **DELAYED** _____

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Fill (ML) - SILT						Vaccum excavation from 0 ft to 10 ft. Soil identified based on observation during vacuum excavation.
5			816.9					
		Silt (ML)						
10		- olive, tan, moist, medium stiff, SILT with fine sand and clay; micaceous; with iron oxide staining		SS -1	10.0	5-4-4 (8)		residual soil.
15		- wet, medium stiff		SS -2	14.5	2-3-3 (6)		
20		- moist, very stiff, more iron oxide staining below 19 ft		SS -3	19.5	2-4-6 (10)		
25				SS	24.5	3-3-4		

(Continued Next Page)

SOUTHERN COMPANY

BORING LOG

BORING B-19

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

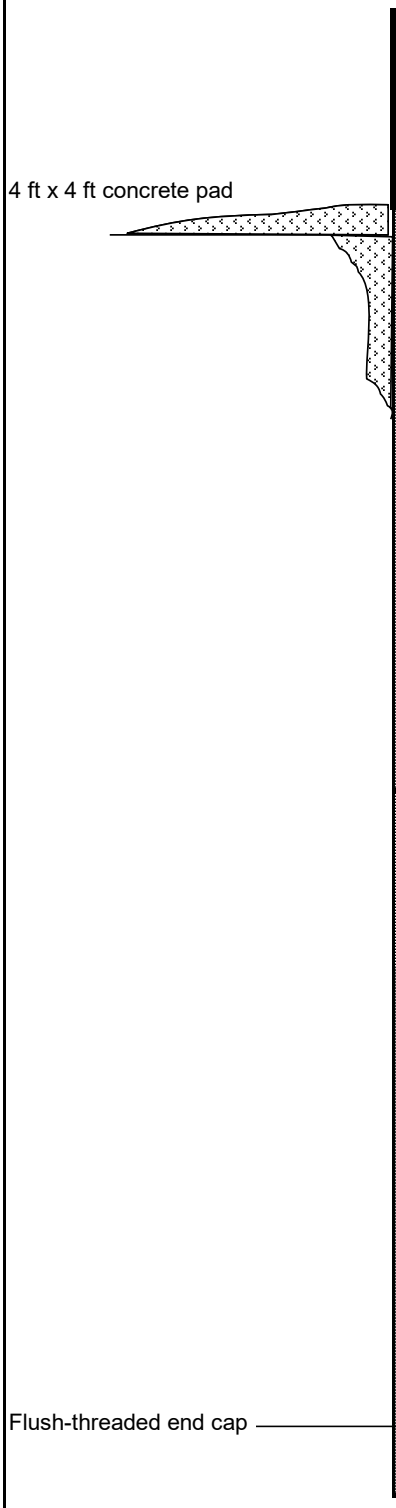
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)*		-4		(7)		
		- moist, medium stiff						
		▼ - wet, soft, little mica; manganese oxide staining; very weathered; rock texture		SS -5	29.5	1-1-1 (2)		
30								
		- brown, wet, stiff, micaceous SILT						
				SS -6	34.5	4-5-8 (13)		
35								
40			781.9					
		Bottom of borehole at 41.0 feet.						
45								
50								

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond 3	RIG TYPE: CME550	
LOGGER: B. Gallagher	DRILLING METHODS: HS Auger	DGWC-19/B-19
DATE CONSTRUCTED: 3/12/2013	N: 1392342.6 E:2202601.0	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.6	825.46
2" Threaded Riser Cap		
GROUND SURFACE	0.0	822.9
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 16 bags cement 23 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	24.7	798.2
ANNULAR SEAL TYPE: PelPlug TR-30 1/4" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	27.2	795.7
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 7 Bags PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	29.4	793.5
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	39.4	783.5
BOTTOM OF CASING	39.8	783.1

Location resurveyed June - July 2020

SOUTHERN COMPANY

BORING LOG

BORING B-20

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 3/4/2012 **COMPLETED** 3/4/2012 **GROUND ELEVATION** 819.8 ft **COORDINATES** N 1392164.5 E 2202315.6

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** R. Tinsley **CHECKED BY** _____ **BORING DEPTH** 41 ft.

GROUND WATER DEPTH: DURING 2 ft. **COMP.** _____ **DELAYED** _____

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 10 ft						
10		**Silt (ML)**	809.8	SS -1	10.0	2-2-5 (7)		
		- yellowish red, medium stiff, micaceous SILT						
15		- light olive brown, stiff, micaceous SILT (saprolite) with relict bedding		SS -2	14.5	4-4-5 (9)		
20		- mottled light olive brown and reddish brown, very stiff, micaceous SILT; interbedded schist and gneiss; saprolite		SS -3	19.5	4-7-9 (16)		
25				SS	24.5	4-6-8		

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

(Continued Next Page)

SOUTHERN COMPANY

BORING LOG

BORING B-20

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

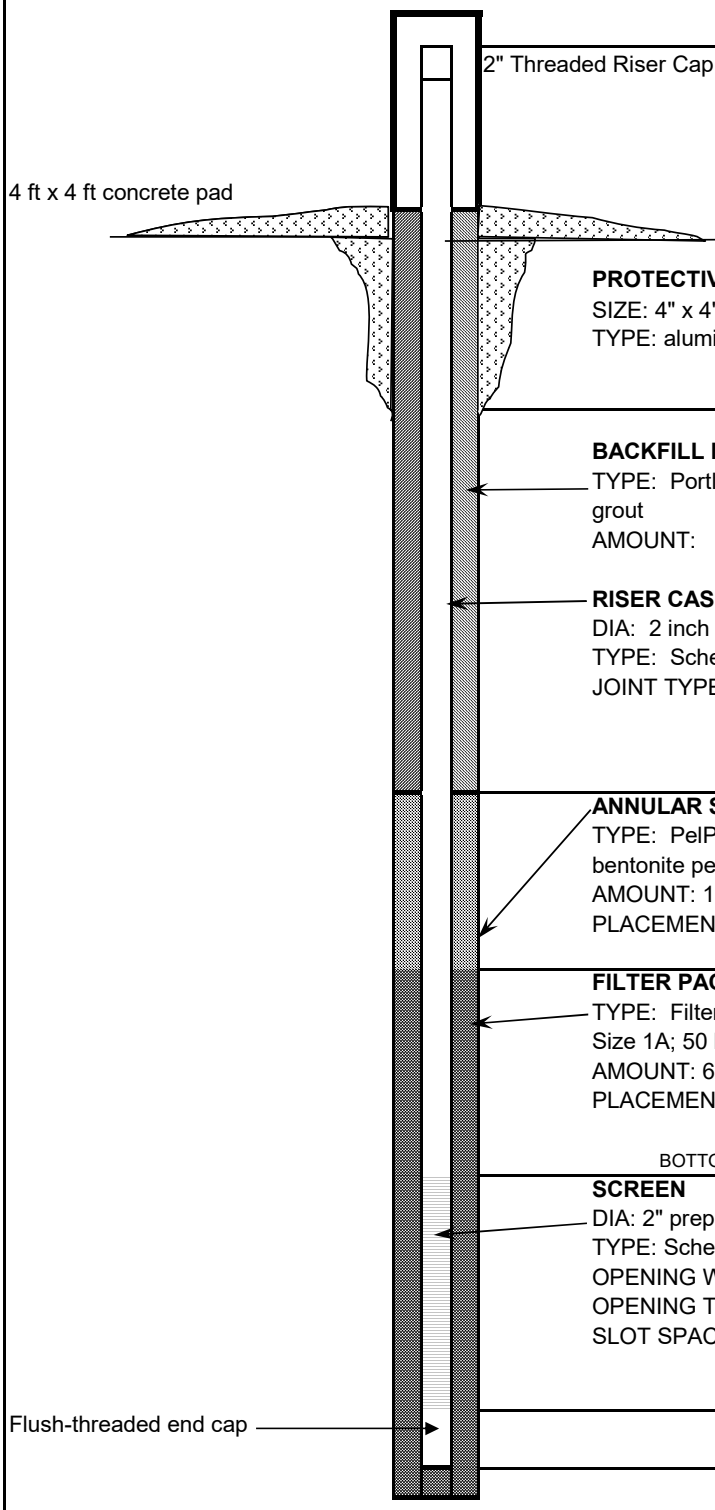
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)*		-4		(14)		
		- olive green, stiff, SAA						
30				SS -5	29.5	6-9-10 (19)		
		- stiff, SAA						
35				SS -6	34.5	3-4-5 (9)		
		- stiff, SAA with heavy staining						
40				SS -7	39.5	5-7-7 (14)		
		- SAA	778.8					
		Bottom of borehole at 41.0 feet.						
45								
50								

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-20/B-20
LOGGER: Rhonda Tinsley	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 3/5/2013	N: 1392164.5 E:2202315.6	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.3	822.14
GROUND SURFACE	0.0	819.8
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 9 bags cement 12 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	24.7	795.1
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	26.7	793.1
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 6.5 Bags PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	29.1	790.7
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	39.1	780.7
BOTTOM OF CASING	39.7	780.1

Location resurveyed June - July 2020

BORING B-21

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 10/31/2012 **COMPLETED** 10/31/2012 **GROUND ELEVATION** 813.5 ft **COORDINATES** N 1392067.5 E 2202063.5
CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit; HQ Rock Core **EQUIPMENT** CME 550
DRILLED BY S. Denty **LOGGED BY** D. Brooks **CHECKED BY** _____ **BORING DEPTH** 69.1 ft.
GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** _____
NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation form 0 ft to 9.5 ft						
5								
			804.0	SS -1	9.5	3-3-4 (7)		
10		**Clayey Silty Sand (SC-SM)** - orange and tan, moist, loose, silty, clayey SAND; micaceous; fine to very fine-grained						
			799.0	SS -2	14.5	4-3-6 (9)		
15		**Silty Sand (SM)** - tan, orange and black, damp, loose, silty SAND; micaceous; very fine-grained						
				SS -3	19.5	6-10-20 (30)		
20		- tan, orange and black, damp, medium dense, silty SAND; micaceous; fine-grained						upper saprolite.
				SS	24.5	10-16-18		
25								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

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SOUTHERN COMPANY

BORING LOG

BORING B-21

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silty Sand (SM)*(con't)* - hard, SAA		-4		(34)		
30		- tan and orange, damp, very stiff, silty SAND with gravel; relic structure present; fine to medium-grained		SS -5	29.5	7-10-12 (22)		saprolite.
35		- olive, orange and black, hard, SAA		SS -6	34.5	18-22-20 (42)		lower saprolite.
40		- olive and black, very hard, SAA		SS -7	39.5	18-25-45 (70)		
45		- olive and tan, damp, hard, silty SAND; relict structure; fine-grained		SS -8	44.5	9-16-21 (37)		saprolite.
50		- hard, SAA		SS -9	49.5	16-21-19 (40)		

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

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SOUTHERN COMPANY

BORING LOG

BORING B-21

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

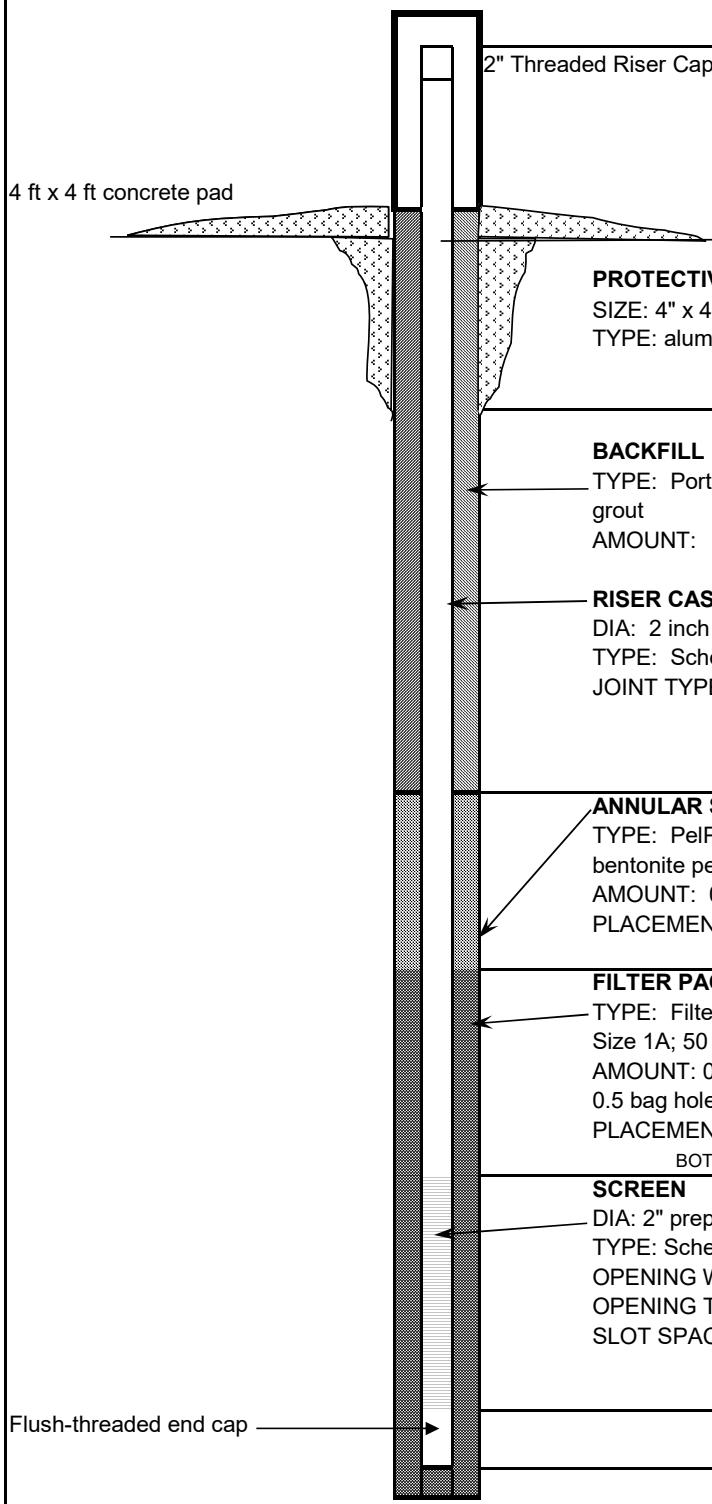
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55		**Silty Sand (SM)***(con't)* - very hard, SAA		SS -10	54.5	50 (0)		
60			753.4	RC -1	60.1			
		Schist - black and gray, SCHIST SAPROCK saprock or schist like MYLONITE; weathering and iron and manganese staining along foliations						
65				RC -2	64.1			
			744.4					
70		Bottom of borehole at 69.1 feet.						
75								
80								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-21/B-21
LOGGER: Dustin Brooks	DRILLING METHODS: HS Auger/HQ Rock Core	
DATE CONSTRUCTED: 10/31/2012	N: 1392067.5 E:2202063.5	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.8	816.28
GROUND SURFACE	0.0	813.5
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 15 bags cement 20 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	51.2	762.3
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 0.5 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	56.4	757.1
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 0.5 Bag filter pac 0.5 bag hole PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	58.6	754.9
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	68.6	744.9
BOTTOM OF CASING	69.0	744.5

HOLE DIA: 7 inch (auger)
3.8 inch (HQ core)

SOUTHERN COMPANY

BORING LOG

BORING B-22

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 10/25/2012 **COMPLETED** 10/25/2012 **GROUND ELEVATION** 813.7 ft **COORDINATES** N 1392126.3 E 2201791.9

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit; HQ Rock Core **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** C. Sellers **CHECKED BY** _____ **BORING DEPTH** 59.5 ft.

GROUND WATER DEPTH: DURING 20 ft. **COMP.** _____ **DELAYED** _____

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 9.5 ft						
10		**Silt (ML)** - brown, very stiff, SILT; micaceous	804.2	SS -1	9.5	6-9-9 (18)		upper saprolite.
15		- tan, very moist, medium stiff, SILT; contains very fine sand and mica		SS -2	14.5	3-3-5 (8)		
20	▽	- wet, very stiff, SAA		SS -3	19.5	10-11-15 (26)		
25				SS	24.5	3-4-4		

(Continued Next Page)

SOUTHERN COMPANY

BORING LOG

BORING B-22

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)*		-4		(8)		
		- brown, medium stiff, SILT; contains fine sand and mica						
30				SS -5	29.5	10-16-19 (35)		lower sparolite.
		- dark brown to dark gray, wet, hard, weathered schist						
35				SS -6	34.5	50 (0)		
		- very hard, SAA						
40				SS -7	39.5	10-15-50 (65)		
		- brown to orange, wet, very hard						
		- black, weathered schist	769.2	SS -8	44.5	50 (0)		
45		**Schist**		RC -1	44.8			
		- very weathered SCHIST wtih mud in fractures						
			764.2	RC -2	49.5			
50		**Gneiss**						
		- very fractured BIOTITE GNEISS with schist-like features; red staining						

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

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SOUTHERN COMPANY

BORING B-22
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BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

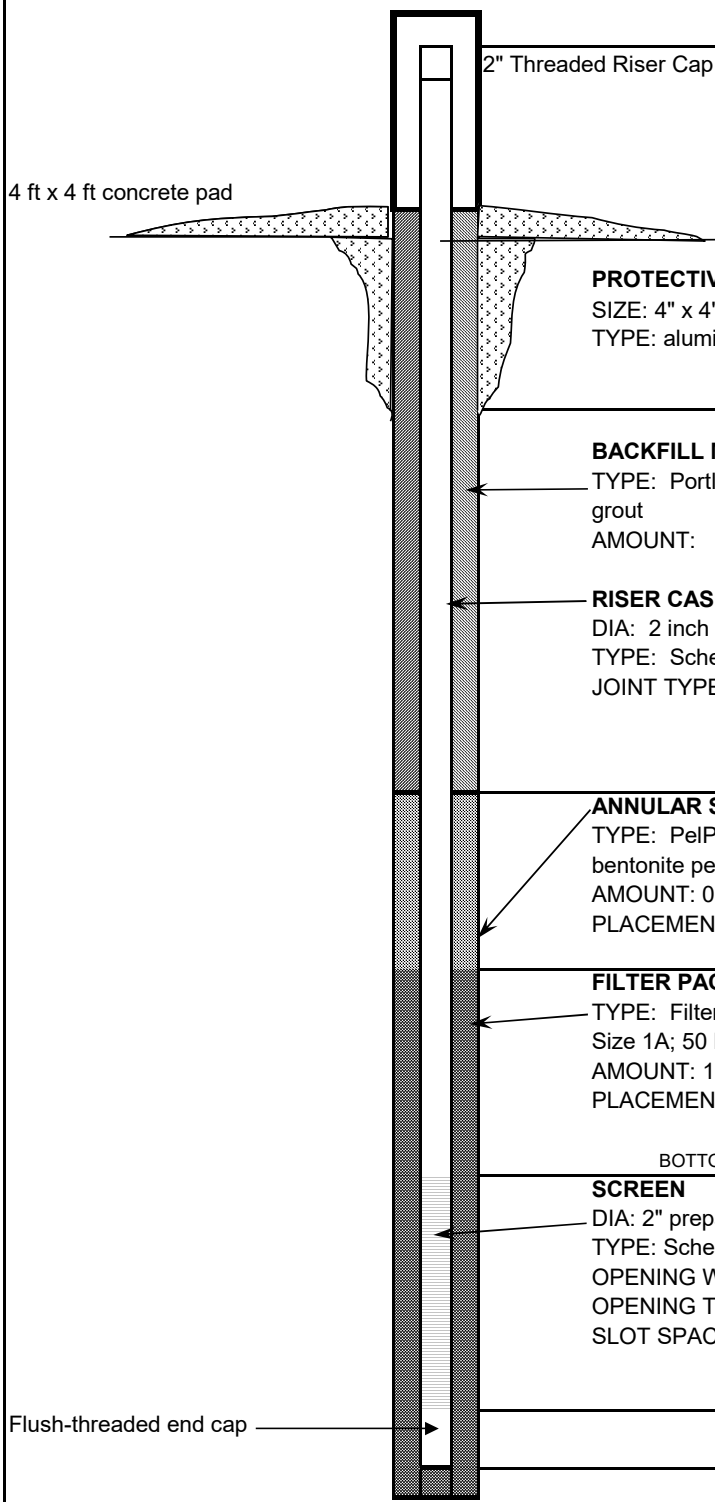
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55		**Gneiss***(con't)* - GNEISS (mylonite); fractures throughout; stained	754.2	RC -3	54.5			
60		Bottom of borehole at 59.5 feet.						
65								
70								
75								
80								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-22/B-22
LOGGER: Cale Sellers	DRILLING METHODS: HS Auger/HQ Rock Core	
DATE CONSTRUCTED: 10/25/2012	N: 1392126.3 E:2201791.9	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.9	816.59
GROUND SURFACE	0.0	813.7
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 9 bags cement 12.5 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	44.6	769.1
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 0.25 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	47.7	766.0
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 1 Bag PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	49.7	764.0
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	59.7	754.0
BOTTOM OF CASING	60.0	753.7

HOLE DIA: 7 inch (auger)
3.8 inch (HQ core)

SOUTHERN COMPANY

BORING LOG

BORING B-23

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 10/24/2012 **COMPLETED** 10/25/2012 **GROUND ELEVATION** 815.7 ft **COORDINATES** N 1392239.7 E 2201582

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit; HQ Rock Core **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** C. Sellers **CHECKED BY** _____ **BORING DEPTH** 59.4 ft.

GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** _____

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vaccum excavation from 0 ft to 9.5 ft						
			806.2	SS -1	9.5	3-3-3 (6)		
10		**Silt (ML)** - dark brown, wet, medium stiff, clayey SILT with gravel (schist)						
				SS -2	14.5	WH-1-1 (2)		
15		- dark gray, very soft, clayey SILT; contains wood						
				SS -3	19.5	1-3-7 (10)		
20		- light purple.gray, stiff, SILT; very fine-grained						
			791.2	SS	24.5	10-14-16		
25		**Silty Sand (SM)**						

(Continued Next Page)

SOUTHERN COMPANY

BORING LOG

BORING B-23

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silty Sand (SM)*(con't)*		-4		(30)		
		- light tan, damp, medium dense, silty SAND; fine to very fine-grained; micaceous						
30				SS -5	29.5	7-5-2 (7)		
		- dark gray to brown, loose, angular gravel at top of sample; saprolite at bottom						
35				SS -6	34.5	13-17-50 (67)		
		- dark gray to brown, very dense, saprolite						
40				SS -7	39.5	50 (0)		
		- light tan to white, very dense, saprolite (silty); micaceous						
45				SS -8	44.5			
		- no sample obtained						
			768.6	RC -1	47.1			
		Gneiss						
50				RC -2	49.4			
		- weathered GNEISS; vertical fractures and red staining throughout						

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SOUTHERN COMPANY

BORING LOG

BORING B-23
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SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

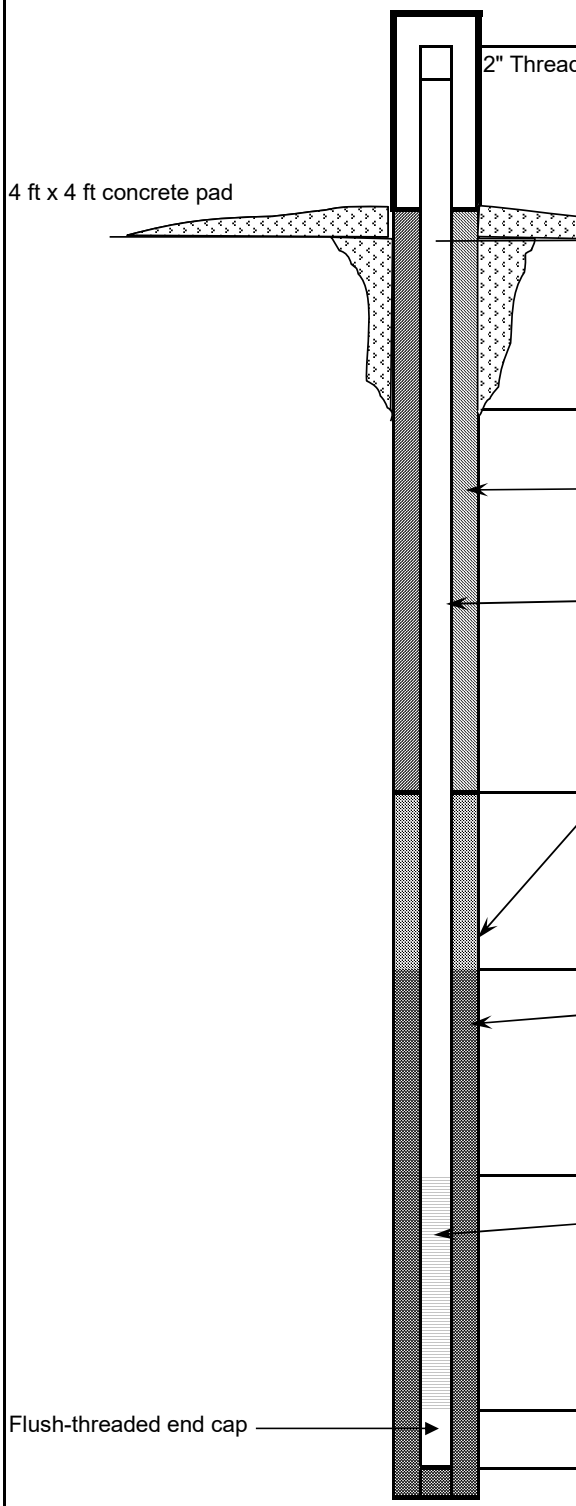
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55		**Gneiss***(con't)* - light gray, GNEISS; some fractures		RC -3	54.4			
			756.3					
60		Bottom of borehole at 59.4 feet.						
65								
70								
75								
80								

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-23/B-23
LOGGER: Cale Sellers	DRILLING METHODS: HS Auger/HQ Rock Core	
DATE CONSTRUCTED: 10/25/2012	N: 1392239.7 E:2201582.0	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.7	818.37
GROUND SURFACE	0.0	815.7
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 8 bags cement 11 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	42.9	772.8
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 0.25 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	46.8	768.9
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 1 Bag PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	49.8	765.9
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	59.8	755.9
BOTTOM OF CASING	60.1	755.6

HOLE DIA: 7 inch (auger)
3.8 inch (HQ core)

Location resurveyed June - July 2020

SOUTHERN COMPANY

BORING LOG

BORING B-42
Page 1 of 2

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 11/12/2012 **COMPLETED** 11/12/2012 **GROUND ELEVATION** 802 ft **COORDINATES** N 1391327.8 E 2201870.2

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** C. Sellers **CHECKED BY** _____ **BORING DEPTH** 51 ft.

GROUND WATER DEPTH: DURING 30 ft. **COMP.** _____ **DELAYED** _____

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 9.5 ft						
10		**Lean Clay (CL)** - orange/tan, medium stiff, silty CLAY; micaceous; fine to very-fine grained	792.5	SS -1	9.5	1-2-4 (6)		
15		**Silt (ML)** - tan/orange/some white, stiff, SILT with very fine sand; very micaceous; saprolite	787.5	SS -2	14.5	3-4-6 (10)		
20		- SAA		SS -3	19.5	4-4-5 (9)		
25				SS	24.5	1-3-4		

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

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SOUTHERN COMPANY

BORING LOG

BORING B-42

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

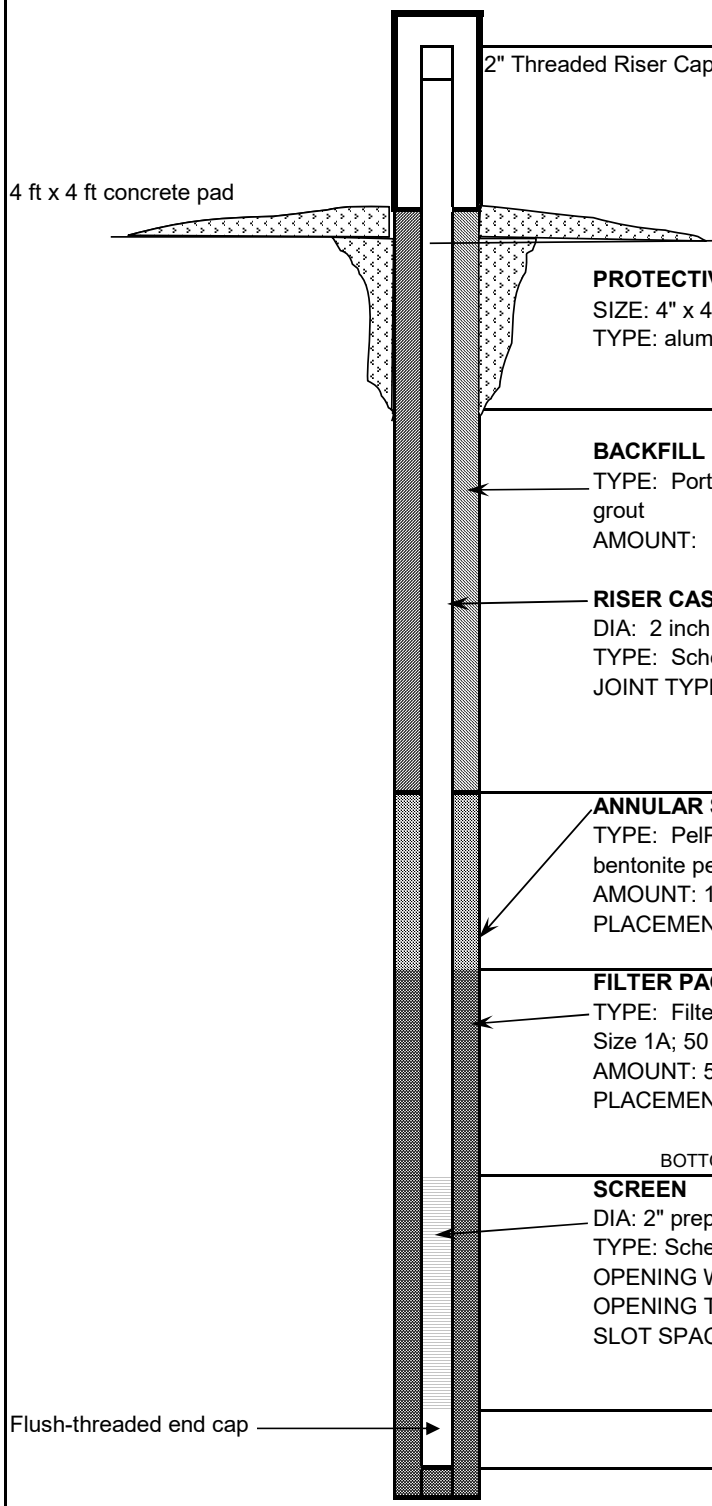
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)* - light tan, medium stiff, clayey SILT; very fine-grained; some mica (less than above)		-4		(7)		
30		▽ - tan with black banding, wet, soft, SILT with very fine-grained sand		SS -5	29.5	1-2-2 (4)		
35		- wet, hard, SILT with fine sand and some gravel; angular; saprolite		SS -6	34.5	7-22-26 (48)		
40		- tan, wet, very stiff, SILT with fine sand and angular gravel		SS -7	39.5	8-9-12 (21)		
45		- wet, very stiff, SAA		SS -8	44.5	5-9-14 (23)		
50		**Silty Sand (SM)** - tan, damp, silty SAND	752.5	SS -9	49.5			
		Bottom of borehole at 51.0 feet.	751.0					

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	DGWC-42/B-42
LOGGER: Cale Sellers	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 11/12/2012	N: 1391327.8 E:2201870.2	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.7	804.68
GROUND SURFACE	0.0	802.0
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 8 bags cement 11 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	35.2	766.8
ANNULAR SEAL TYPE: PelPlug TR-30 1/4" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	37.2	764.8
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 5 Bags PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	39.9	762.1
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	49.9	752.1
BOTTOM OF CASING	50.4	751.6

Location resurveyed June - July 2020

RECORD OF BOREHOLE DGWC-47/B-47

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 28.80 ft
LOCATION: Smyrna, GA

DRILL RIG: 100C Track Mounted Rig
DATE STARTED: 6/23/16
DATE COMPLETED: 6/23/16

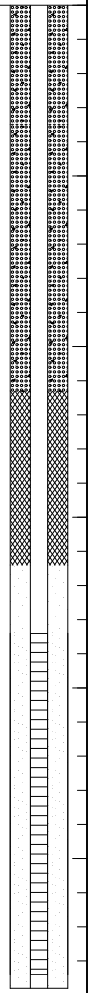
NORTHING: 1,391,553.80
EASTING: 2,202,610.50
GS ELEVATION: 794.3
TOC ELEVATION: 797.45 ft

DEPTH W.L.: 15.98
ELEVATION W.L.: 778.32
DATE W.L.: 6/23/2016
TIME W.L.: 15:56

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	ELEV. / DEPTH (ft)
0		0.00 - 4.00 SILT; red brown, trace subrounded to subangular fine gravel, gray to white, dry (fill)	ML	790.3
5	790	4.00 - 9.00 SILT; orange brown, some medium sand with black laminations, micaceous, stiff, dry to moist (saprolite)	ML	4.00 785.3
10	785	9.00 - 10.00 SILT; gray, some white and balck laminations, dry, stiff	ML	9.00 784.3
		10.00 - 13.00 SILT and GRAVEL; fine to coarse gravel and cobbles/moderately weathered rock (biotite schist), light brown silt and black with orange staining gravel, foliated, friable	GW-GM	10.00 781.3
15	780	13.00 - 20.00 GNEISS and weathered SCHIST; gray and white, foliated biotite gneiss, some orange staining, trace pyrite and garnets (saprock)	PWR	13.00 774.3
20	775	20.00 - 28.80 Biotite GNEISS (competent rock); some orange staining at fractures; trace pyrite and garnets	BR	20.00 765.5
25	770			
30	765	Boring completed at 28.80 ft		
35	760			
40	755			
45	750			

SAMPLES: SAMPLE NO. | TYPE | REC

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-28.8'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush threaded with O-ring

WELL SCREEN
Interval: 18.4'-28.4'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 16.35'-28.8'
Type: Filtersil std61

FILTER PACK SEAL
Interval: 11.3'-16.4'
Type: 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0'-11.3'
Type: Portland Type I/Type II/Gel Mix

WELL COMPLETION
Pad: 4'x4'x4"
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Bill Lindsey

GA INSPECTOR: K. Jurinko, PG
CHECKED BY: Rachel P. Kirkman, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE DGWC-48/B-48

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 30.00 ft
LOCATION: Smyrna, GA

DRILL RIG: 100C Track Mounted Rig
DATE STARTED: 6/21/16
DATE COMPLETED: 6/22/16

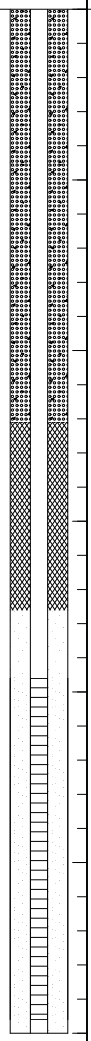
NORTHING: 1,391,314.60
EASTING: 2,202,290.20
GS ELEVATION: 785.2
TOC ELEVATION: 788.33 ft

DEPTH W.L.: 11.35
ELEVATION W.L.: 773.85
DATE W.L.: 6/23/2016
TIME W.L.: 9:55

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	ELEV. / DEPTH (ft)
0	785	0.00 - 3.00 SILT; orange brown, micaceous, dry, very stiff (fill)	ML	782.2
		3.00 - 11.00 SILT; oragnish brown to tan, laminations, trace to some medium to coarse sand, trace fine to coarse gravel, gray, subangular, moist (saprolite)	ML	3.00
5	780			
10	775			774.2
		11.00 - 24.00 SILT; gray to blackish brown, some fine to coarse sand, laminations, stiff to very stiff, dry	ML	11.00
15	770			
20	765			
				761.2
25	760	24.00 - 30.00 biotite GNEISS; gray and white, orange staining, partially weathered bedrock, some clay, gray, micaceous	BR	24.00
30	755	Boring completed at 30.00 ft		755.2
35	750			
40	745			
45				

SAMPLES: SAMPLE NO. | TYPE | REC

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-30'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush threaded with O-ring

WELL SCREEN
Interval: 19.6'-29.6'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 17.6'-30'
Type: Filtersil std61

FILTER PACK SEAL
Interval: 12.1'-17.6'
Type: 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0'-12.1'
Type: Portland Type I/Type II/Gel Mix

WELL COMPLETION
Pad: 4'x4'x4"
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Bill Lindsey

GA INSPECTOR: K. Jurinko, PG
CHECKED BY: Rachel P. Kirkman, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

PIEZOMETER LOGS

Location resurveyed June - July 2020

SOUTHERN COMPANY

BORING LOG

BORING B-03

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 10/2/2012 **COMPLETED** 10/3/2012 **GROUND ELEVATION** 835 ft **COORDINATES** N 1394045.1 E 2202411.5

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit; HQ Rock Core **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** R. Tinsley **CHECKED BY** _____ **BORING DEPTH** 42 ft.

GROUND WATER DEPTH: DURING 23 ft. **COMP.** _____ **DELAYED** 22.5 ft. after 24 hrs.

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML) - Grass - brownish yellow, dry, SILT						
5		- brownish yellow, dry, medium stiff, SILT saprolite with relic bedding.		SS -1	4.5	3-2-3 (5)		upper saprolite.
10		- pale brown and white, medium stiff, mottled; SAA with occasional fragments.		SS -2	9.5	2-3-3 (6)		10YR; powdery; Upper Saprolite.
15		- SAA		SS -3	14.5	2-3-4 (7)		upper saprolite.
20		- mottled deep red and gray, damp, stiff, SILT; with coarse grains of angular quartz; gneiss saprolite.		SS -4	19.5	1-6-5 (11)		upper saprolite.
25		**Silt (ML)**	810.5	SS	24.5	6-6-8		

(Continued Next Page)

SOUTHERN COMPANY

BORING LOG

BORING B-03

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

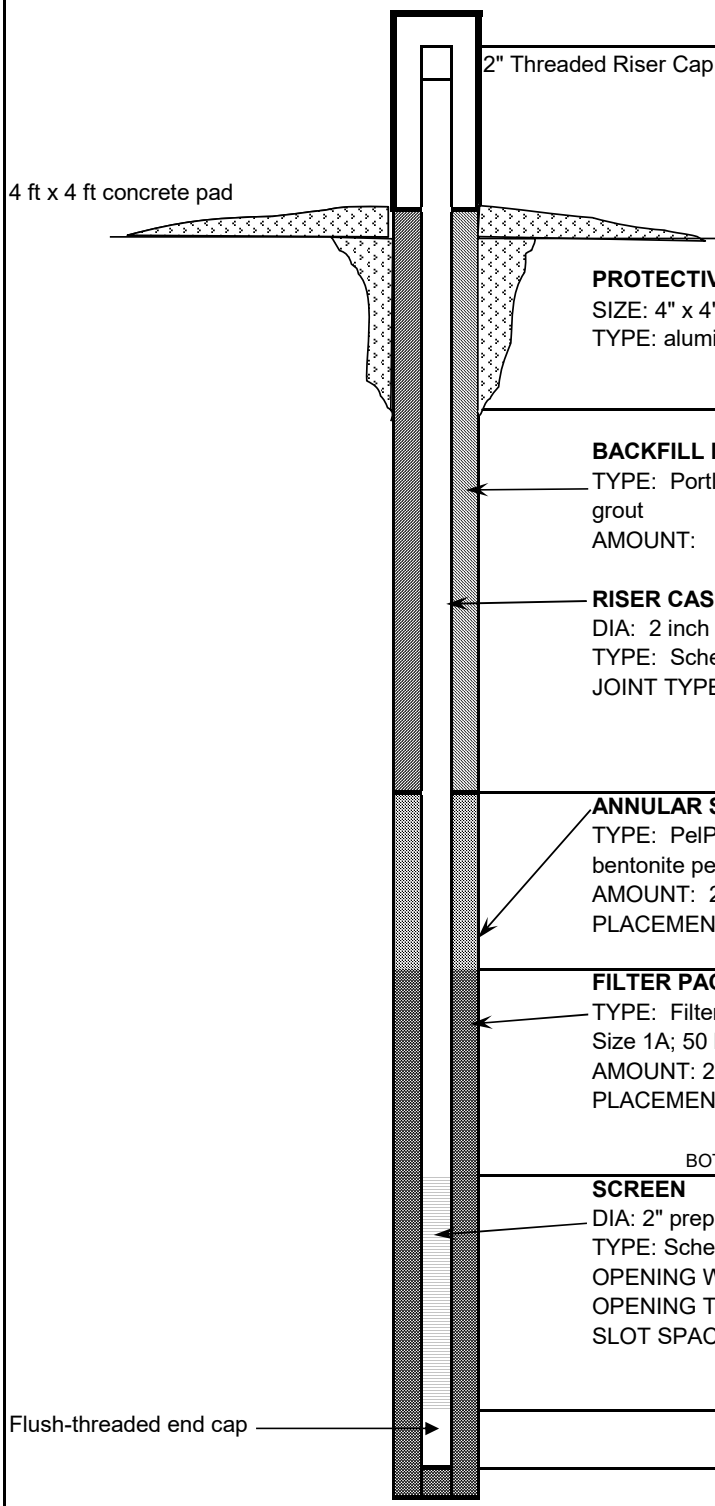
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)*		-5		(14)		good relic banding; lower saprolite.
		- gray and white, stiff, micaceous SILT; weathered; contains fine to coarse-grained quartz and feldspar fragments						
		- SAA						
30				SS -6	29.5	9-7-7 (14)		
		- Refusal @ 32.2'. Start coring @ 32'.	802.8	RC -1	32.0			
		Gneiss						
		- gray and white, hard, slightly weathered, augen gneiss; water (iron, manganese) staining along partings.						
35								
		- Soft weathered zone at bottom of run with some decomposition.						
		- gray and white, hard, slightly weathered, augen gneiss; water (iron, manganese) staining along partings. Approx. 35 to 45 degree angle.		RC -2	37.0			
40								
			793.0					
		Bottom of borehole at 42.0 feet.						
45								
50								

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	B-3
LOGGER: Rhonda Tinsley	DRILLING METHODS: HS Auger/HQ Rock Core	
DATE CONSTRUCTED: 10/3/2012	N: 1394045.1 E:2202411.5	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.78	837.78
2" Threaded Riser Cap		
GROUND SURFACE	0.0	835.0
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 6 bags cement 9 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	20.0	815.0
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 2.25 buckets PLACEMENT: Poured		
TOP OF FILTER PACK	24.2	810.8
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 2.5 Bags PLACEMENT: Poured		
BOTTOM OF RISER / TOP OF SCREEN	26.7	808.4
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	36.7	798.4
BOTTOM OF CASING	37.0	798.0

HOLE DIA: 7 inch (auger)
3.8 inch (HQ core)

SOUTHERN COMPANY

BORING LOG

BORING B-06

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 10/9/2012 **COMPLETED** 10/9/2012 **GROUND ELEVATION** 786.5 ft **COORDINATES** N 1394419.5 E 2203266.5

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** G. Dyer **CHECKED BY** _____ **BORING DEPTH** 35.8 ft.

GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** 7 ft. after 3 hrs.

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Clayey Sand (SC) - red-brown, damp, very loose, silty, clayey SAND; approximately 50% fine-grained sand, 20% clay, 20% silt, 10% organics. Organic rich horizon.	783.0					
5		**Silt (ML)** - red-tan, damp, clayey SILT with fine-grained sand		SS -1	4.5	4-4-8 (12)		A horizon of residual soil.
		- gray to brownish yellow, stiff, clayey SILT to silty CLAY; 60% silt, 30% clay; 10% sand/gravel; contains small (1 to 2 mm) quartz feldspar gravel						
10		- tan-brown w/orange and gray, very moist, very soft, clayey SILT, micaceous; 70% silt, 25% clay, 5% fine-grained sand		SS -2	9.5	1-1-1 (2)		B horizon of residual soil.
15		- tan-brown, very moist, very soft, clayey SILT to silty CLAY; 55% clay, 40% silt, approximately 5% fine-grained sand		SS -3	14.5	1-1-1 (2)		B horizon of residual soil.
20		- olive gray to tan--brown, dry, stiff, clayey SILT, weathered with some relic structure; 60% silt, 35% clay, 5% fine-grained sand		SS -4	19.5	3-5-6 (11)		Top of upper saprolite zone.
25				SS	24.5	12-32-46		

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

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SOUTHERN COMPANY

BORING LOG

BORING B-06

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

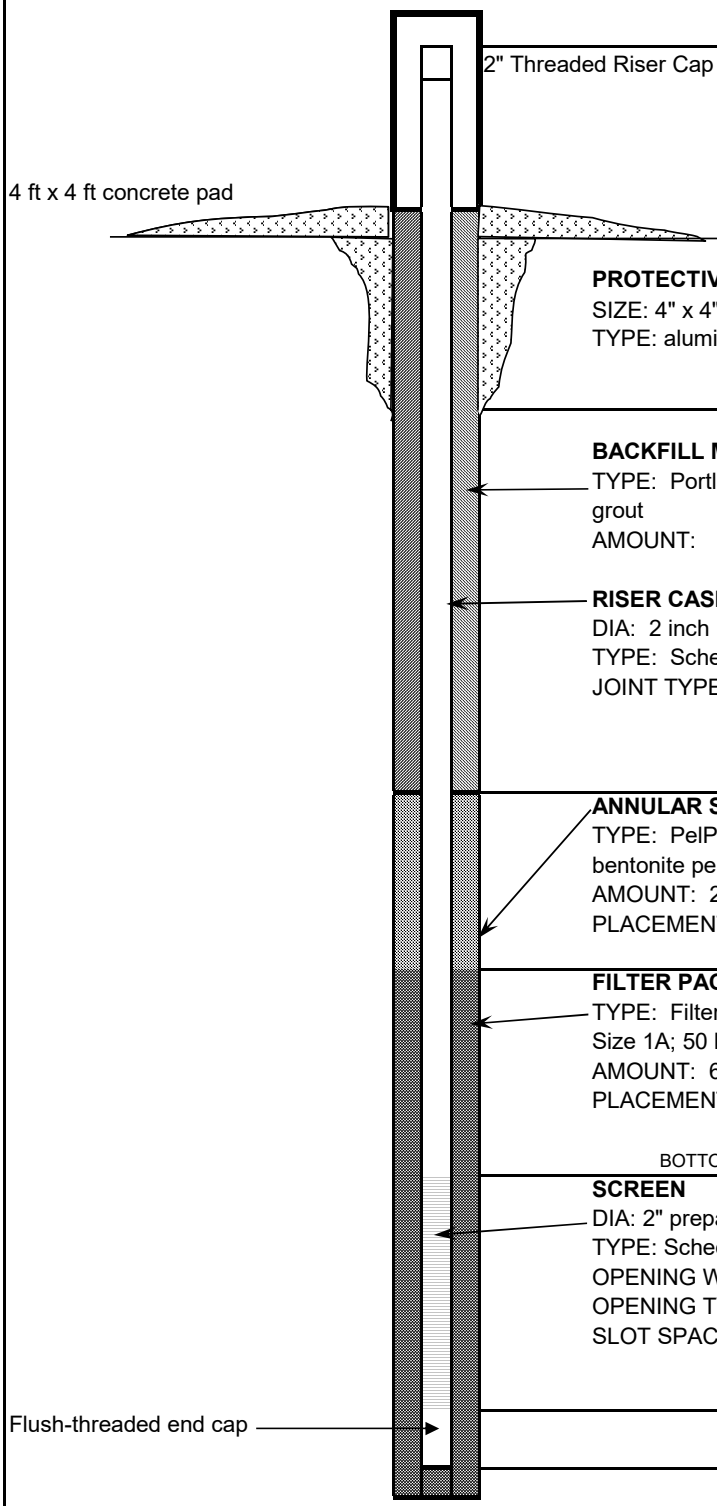
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)* - tan-brown, very hard, clayey SILT with sand and gravel; contains highly weathered schist fragments; micaceous; 50% silt, 30% clay, 20% sand/gravel		-5		(78)		mid-lower saprolite.
30		- tan-brown, damp, very hard, sandy, gravelly, clayey SILT; 50% clayey silt, 50% sandy gravel; gravels are 1 mm to 10 mm in size, angular and gneissic in origin; highly weathered; contains some white leached quartz		SS -6	29.5	50 (0)		lower saprolite.
35		- brown, damp, very hard, clayey SILT; 40% clay, 60% silt; micaceous, contains relic structures	750.7	SS -7	34.5	27-50 (50)		lower saprolite.
		Bottom of borehole at 35.8 feet.						

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	B-6
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 10/9/2012	N: 1394419.5 E: 2203266.5	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-3.0	789.47
GROUND SURFACE	0.0	786.5
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 5 bags cement 7.5 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	16.8	769.7
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 2 buckets PLACEMENT: Tremie		
TOP OF FILTER PACK	21.7	764.8
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 6 Bags PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	25.0	761.5
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	35.0	751.5
BOTTOM OF CASING	35.4	751.1

BORING B-07

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 10/9/2012 **COMPLETED** 10/9/2012 **GROUND ELEVATION** 806.1 ft **COORDINATES** N 1394374.6 E 2203596.1

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** G. Dyer **CHECKED BY** _____ **BORING DEPTH** 26 ft.

GROUND WATER DEPTH: DURING 18.5 ft. **COMP.** _____ **DELAYED** 3.8 ft. after 18 hrs.

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML) - brown to red-brown, damp, very soft, clayey SILT with trace sand; organic rich - red to red-tan, damp, soft, clayey SILT						O Horizon.
5		**Fat Clay (CH)** - tan, brown and orange, damp, medium stiff, silty CLAY; micaceous; relic foliations; 60% clay, 40% silt	801.6	SS -1	4.5	3-3-3 (6)		A-B Horizon / residual soils.
								becomes very moist at 8.5'.
10		**Silt (ML)** - red-tan, very moist, soft, clayey SILT with trace fine sand; slightly micaceous; contains manganese	796.6	SS -2	9.5	1-1-2 (3)		residual soil.
15		- brown-red, very moist, soft, clayey SILT to silty CLAY with trace gravel; micaceous; prevalent manganese staining		SS -3	14.5	1-1-3 (4)		residual soil.
								saturated from 18.5 to 19.5'.
20		- olive gray (greenish), wet, medium stiff, clayey SILT; micaceous; contains relic schist fragments		SS -4	19.5	1-1-5 (6)		residual soil.
25		- olive gray to tan-brown, wet, stiff, clayey, gravelly SILT; contains manganese and moderately		SS	24.5	7-7-8		

(Continued Next Page)

SOUTHERN COMPANY

BORING B-07

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

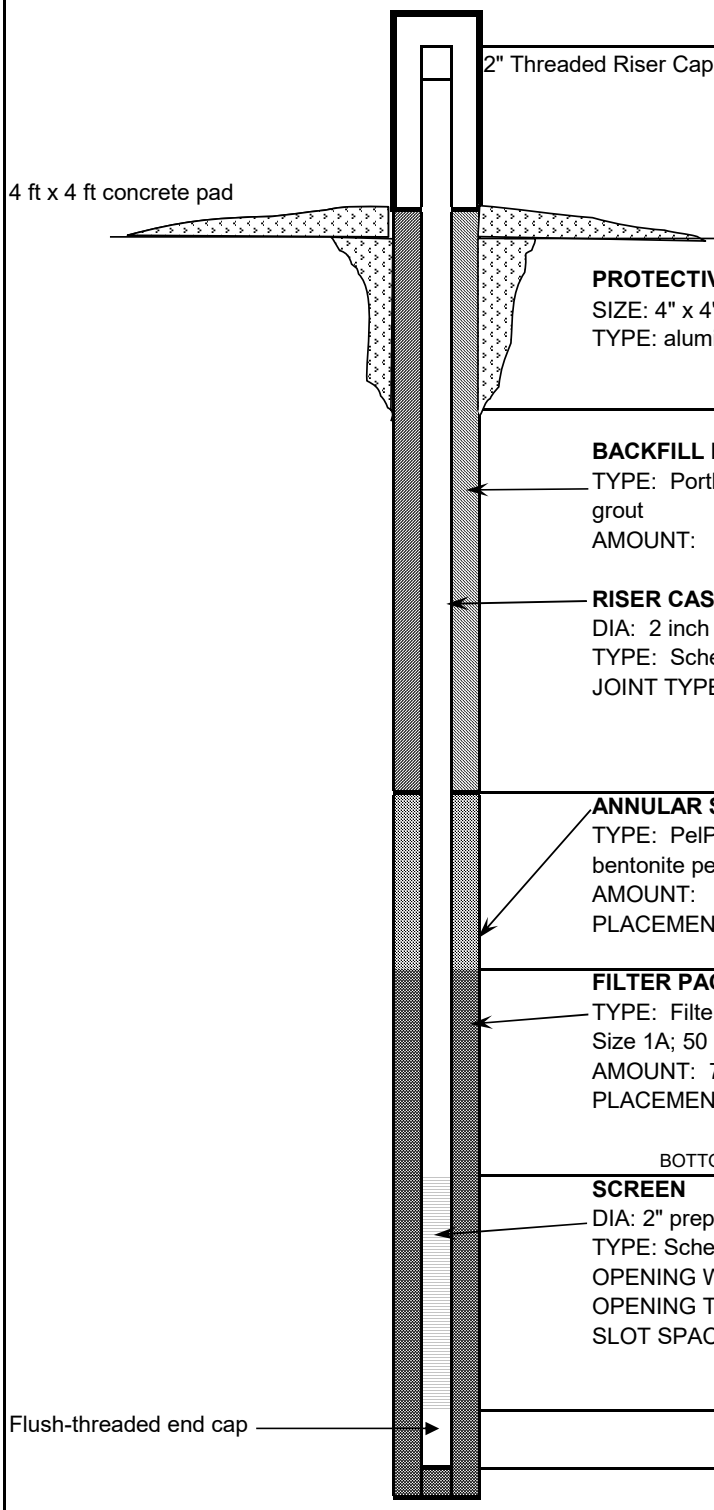
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		weathered gneissic fragments; relic structures preserved insome instances **Silt (ML)***(con't)*	780.1	-5		(15)		upper saprolite.
		Bottom of borehole at 26.0 feet.						

30
35
40
45
50

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	B-7
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 10/9/2012	N: 1394374.6 E:2203596.1	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-3.1	809.16
GROUND SURFACE	0.0	806.1
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 3 bags cement 1.75 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	7.6	798.5
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1.75 buckets PLACEMENT: Poured		
TOP OF FILTER PACK	12.7	793.4
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 7 Bags PLACEMENT: Poured		
BOTTOM OF RISER / TOP OF SCREEN	14.8	791.3
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	24.8	781.3
BOTTOM OF CASING	25.2	780.9

BORING B-16

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 12/19/2012 **COMPLETED** 12/19/2012 **GROUND ELEVATION** 823.6 ft **COORDINATES** N 1392595.1 E 2203315.4

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit **EQUIPMENT** CME 550

DRILLED BY T. Milam **LOGGED BY** G. Dyer **CHECKED BY** _____ **BORING DEPTH** 46 ft.

GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** _____

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 9 ft						
5								
			814.6					
10		**Silt (ML)** - tan and brown, dry, stiff, SILT; slightly micaceous; trace manganese oxides		SS -1	9.5	3-4-5 (9)		residual soil.
15		- tan, brown and orange, dry, medium stiff, sandy SILT; sand is fine to very fine-grained; slightly micaceous; trace schistosity		SS -2	14.5	3-3-5 (8)		residual soil.
20		- light tan to brown, dry, medium stiff, SILT with clay (about 10%); clay is slightly plastic; slightly micaceous; trace schitose gravel; trace manganese oxide		SS -3	19.5	3-3-3 (6)		residual soil.
25				SS	24.5	2-3-3		

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

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SOUTHERN COMPANY

BORING LOG

BORING B-16

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

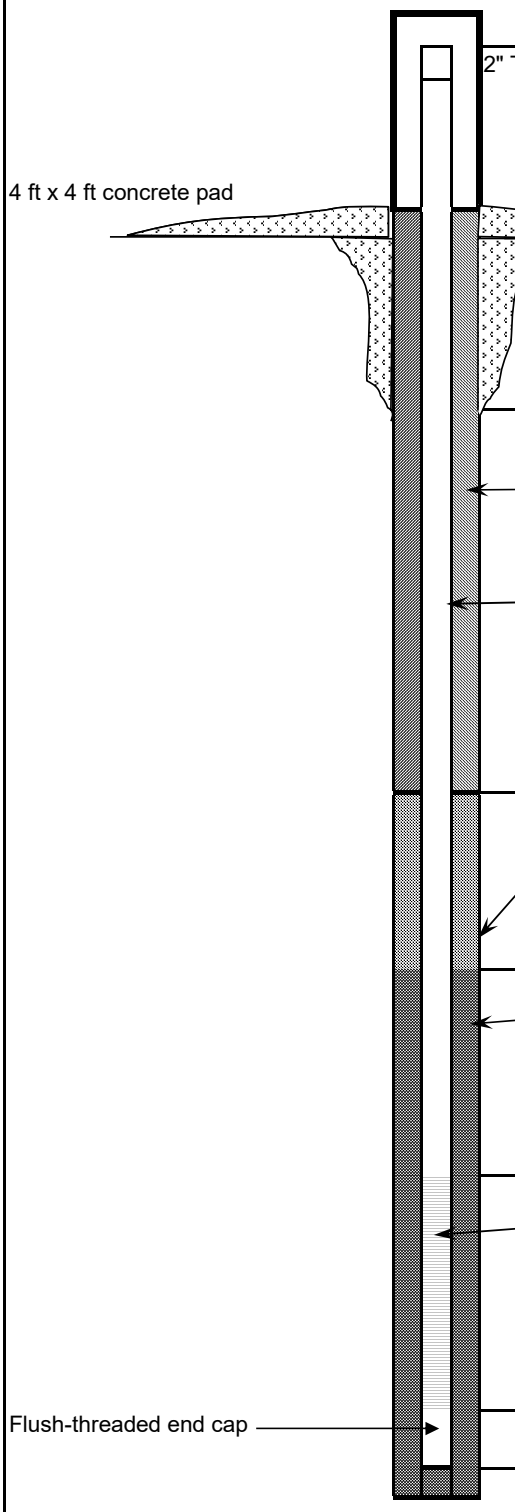
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)*		-4		(6)		
		- medium stiff, SAA; silt more elastic						
30				SS -5	29.5	7-5-6 (11)		
		- mottled tan, brown and black, moist, stiff, SILT; saprolite like relict structures; micaceous; weathered schistose foliations; trace gravel; trace manganese oxides						upper saprolite.
35				SS -6	34.5	6-5-5 (10)		
		- wet, stiff, SAA						
40				SS -7	39.5	5-6-5 (11)		
		- wet, stiff, SAA; more schist gravel and slightly less weathered						
45				SS -8	44.5	5-9-8 (17)		
		- wet, very stiff, SAA; slightly less weathered trend	777.6					
		Bottom of borehole at 46.0 feet.						
50								

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: T. Milam	
LOCATION: Ash Pond	RIG TYPE: CME550	B-16
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 12/19/2012	N: 1392595.1 E:2203315.4	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.9	826.47
GROUND SURFACE	0.0	823.6
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 5.5 bags cement 8 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	26.5	797.1
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 0.75 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	29.2	794.4
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 4.5 Bag PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	33.4	790.2
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	43.4	780.2
BOTTOM OF CASING	43.7	779.9

Location resurveyed June - July 2020

SOUTHERN COMPANY

BORING LOG

BORING B-18

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 1/9/2012 **COMPLETED** 1/9/2012 **GROUND ELEVATION** 823.9 ft **COORDINATES** N 1392521 E 2202875.5

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** G. Dyer **CHECKED BY** _____ **BORING DEPTH** 31 ft.

GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** 11 ft. after 24 hrs.

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		- Vacuum excavation from 0 ft to 18.0 ft						
10								
15								
			805.9					
20		**Silt (ML)** - tan-orange, wet, medium stiff, SILT with clay; trace quartz gravel; mica flakes; trace relict structures but highly weathered		SS -1	19.5	2-3-5 (8)		residual soil-upper saprolite transition.
25				SS	24.5	3-5-6		

(Continued Next Page)

SOUTHERN COMPANY

BORING LOG

BORING B-18

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

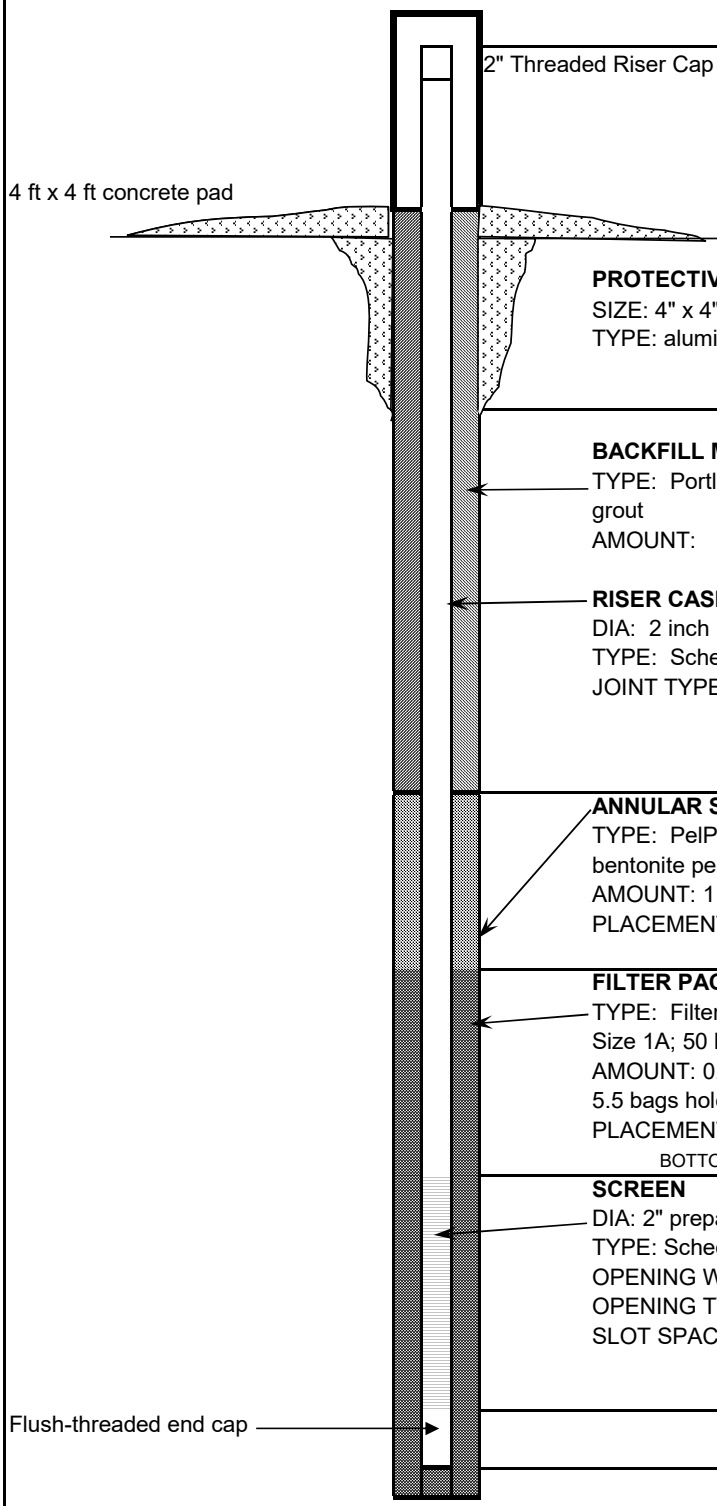
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)* - mottled tan, green, gray and black, very moist, stiff, SILT; highly weathered relict structures; prevalent manganese oxides; trace gravel and clay		-2		(11)		residual soil-upper saprolite transition.
30		- more tan-gray, soft, SAA		SS -3	29.5	1-2-2 (4)		
			792.9					
		Bottom of borehole at 31.0 feet.						
35								
40								
45								
50								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	B-18
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 1/9-10/2013	N: 1392521 E:2202875.5	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.7	826.56
GROUND SURFACE	0.0	823.9
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 28 bags cement 42 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	18.0	805.9
ANNULAR SEAL TYPE: PelPlug TR-30 1/4" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	19.2	804.7
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 0.5 Bag filter pac 5.5 bags hole PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	22.4	801.5
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	32.4	791.5
BOTTOM OF CASING	32.6	791.3

Location resurveyed June - July 2020

SOUTHERN COMPANY

BORING LOG

BORING B-24
Page 1 of 3

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 10/24/2012 **COMPLETED** 10/24/2012 **GROUND ELEVATION** 819.3 ft **COORDINATES** N 1392479.9 E 2201450
CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit; HQ Rock Core **EQUIPMENT** CME 550
DRILLED BY S. Denty **LOGGED BY** C. Sellers **CHECKED BY** **BORING DEPTH** 79.1 ft.
GROUND WATER DEPTH: DURING **COMP.** **DELAYED**
NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 9.5 ft						
5								
			809.8	SS -1	9.5	WH-1-1 (2)		
10		**Silt (ML)** - light gray, very soft, SILT with very fine to fine-grained sand						
				SS -2	14.5	3-4-6 (10)		
15		- stiff, SAA; very micaceous						
				SS -3	19.5	5-4-4 (8)		
20		- light tan to brown, medium stiff, SILT; very fine to fine-grained; micaceous; 2" quartz						
				SS	24.5	19-37-50		
25								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

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SOUTHERN COMPANY

BORING LOG

BORING B-24

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)*		-4		(87)		
		- wet, very hard, SILT; saprolite (weathered gneiss); banding						
30				SS -5	29.5	50 (0)		
35		- SAA		SS -6	34.5	50 (0)		
40				SS -7	39.5	50 (0)		
45				SS -8	44.5	50 (0)		
50		- SAA; contains gneiss fragments		SS -9	49.5	50 (0)		

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

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SOUTHERN COMPANY

BORING LOG

BORING B-24

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

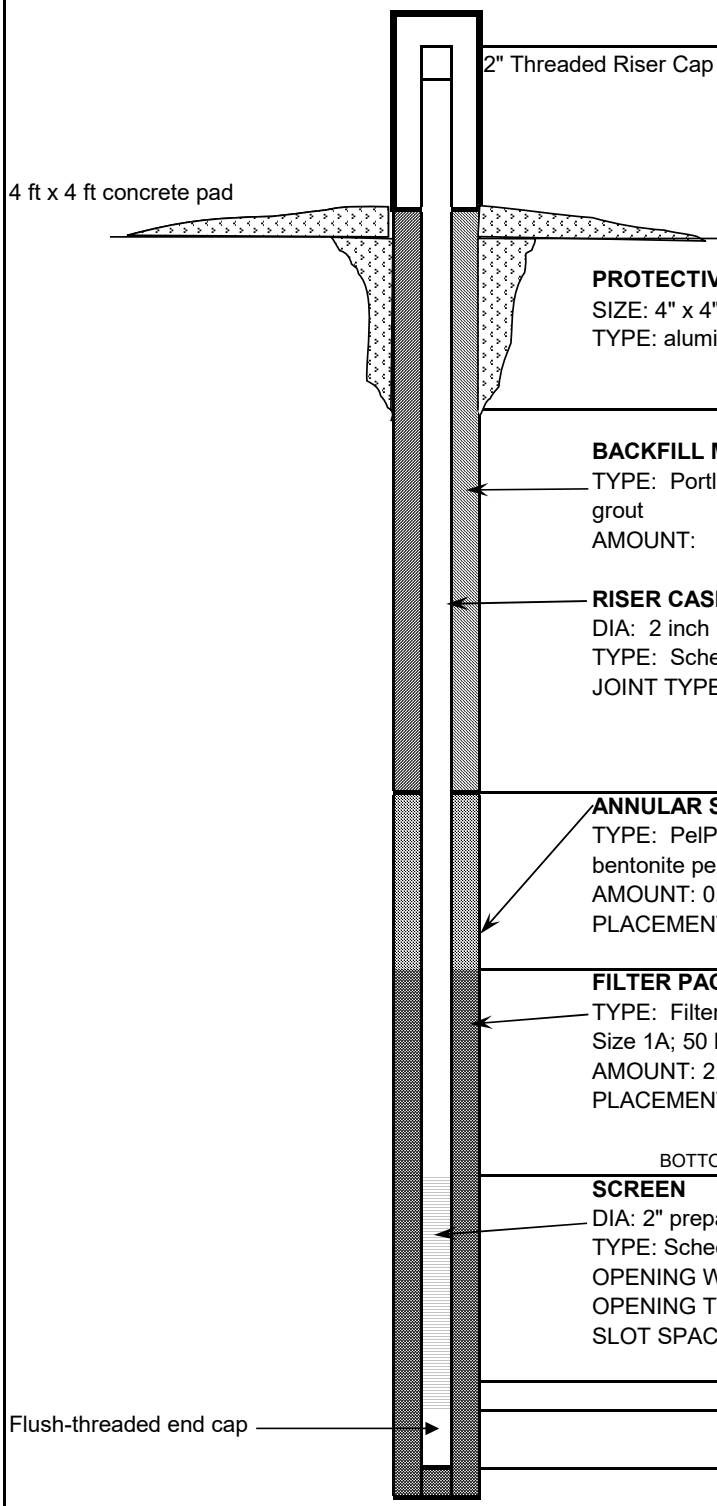
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55		**Silt (ML)***(con't)*		SS -10	54.5	50 (0)		
		- SAA						
			760.2	RC -1	59.1			
60		**Gneiss**						
		- light gray to orange, highly weathered, GNEISS; highly fractured, vertical and horizontal						
				RC -2	64.1			
65		- light gray with red staining, SAA						
				RC -3	69.1			
70		- SAA						
				RC -4	74.1			
75			740.2					
		Bottom of borehole at 79.1 feet.						
80								

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	B-24
LOGGER: Cale Sellers	DRILLING METHODS: HS Auger/HQ Rock Core	
DATE CONSTRUCTED: 10/24/2012	N: 1392479.9 E:2201450.0	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.8	822.11
GROUND SURFACE	0.0	819.3
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 21 bags cement 30 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	60.8	758.5
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 0.25 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	65.9	753.4
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 2.5 Bags PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	68.3	751.0
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	78.3	741.0
BOTTOM OF CASING	79.1	740.2

HOLE DIA: 7 inch (auger)
3.8 inch (HQ core)

Location resurveyed June - July 2020

SOUTHERN COMPANY

BORING LOG

BORING B-25
Page 1 of 3

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 10/23/2012 **COMPLETED** 10/24/2012 **GROUND ELEVATION** 833.5 ft **COORDINATES** N 1392813.3 E 2201502.7

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit; HQ Rock Core **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** B. Gallagher **CHECKED BY** _____ **BORING DEPTH** 54.8 ft.

GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** _____

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 9.5 ft						
10		**Silt (ML)**	824.0	SS -1	9.5	1-2-2 (4)		no recovery.
15		- tan, dry, very hard, saprolite; micaceous, sandy with 1 inch lense of white feldspar at 14.8 ft.		SS -2	14.5	22-50 (50)		
20		- black and white, very hard, SAA; weathered gneiss saprolite		SS -3	19.5	18-36-50 (86)		
25				SS	24.5	25		

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SOUTHERN COMPANY

BORING LOG

BORING B-25

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)* - black and white, dry, weathered gneiss		-4		(0)		
			806.5	RC -1	27.0			
		Gneiss - black and white, medium hard to hard, slightly weathered - two 1/2"augens and weathered joints at 28.5 ft						
30		- soft, weathered and broken from 29.1 to 30.2 ft - joint filled with secondary minerals form 30.2 to 30.7 ft - slightly weathered joints at 31.0, 31.3, and 31.6 ft - 1/4" augen with four slightly weathered joints across foliation from 32.3 to 33.0 ft		RC -2	29.8			
35		- 3 inch weathered soft zone @ 34.5 ft		RC -3	34.8			
40		- 2" quartzite at 42 ft; very little staining; vertical fractures from 40ft to 42ft		RC -4	39.8			
45		- SAA		RC -5	44.8			
50		- weathered; staining in and around fractures		RC -6	49.8			

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

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SOUTHERN COMPANY

BORING LOG

BORING B-25

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

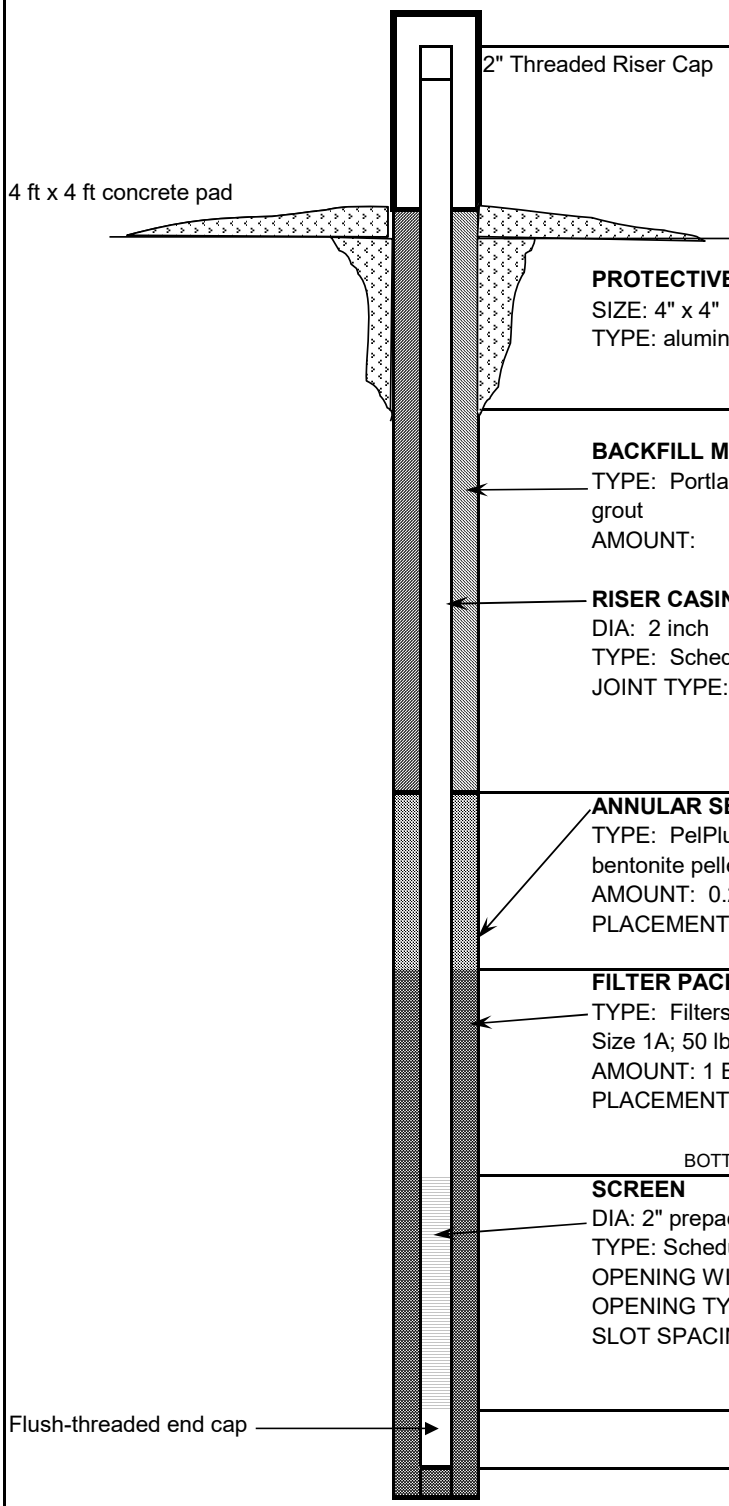
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55	/ \		778.7					
		Bottom of borehole at 54.8 feet.						
60								
65								
70								
75								
80								

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	B-25
LOGGER: B. Gallagher	DRILLING METHODS: HS Auger/HQ Rock Core	
DATE CONSTRUCTED: 10/24/2012	N: 1392813.3 E:2201502.7	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-3.0	836.54
GROUND SURFACE	0.0	833.5
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 10 bags cement 14 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	40.1	793.4
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 0.25 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	42.4	791.1
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 1 Bag; 50 lbs/bag PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	44.4	789.1
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	54.4	779.1
BOTTOM OF CASING	54.8	778.7

HOLE DIA: 7 inch (auger)
3.8 inch (HQ core)

SOUTHERN COMPANY

BORING LOG

BORING B-26

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 10/16/2012 **COMPLETED** 10/23/2012 **GROUND ELEVATION** 850.6 ft **COORDINATES** N 1393105.6 E 2201550.4

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit; HQ Rock Core **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** Sellers/Byrd/Gallager **CHECKED BY** _____ **BORING DEPTH** 49.3 ft.

GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** _____

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 9.5 ft						
10		**Silt (ML)** - tan with white, pink and dark brown layering, stiff, sandy SILT; heavily weathered; micaceous; fine-grained	841.1	SS -1	9.5	4-4-6 (10)		
15		- stiff, SAA; heavily weathered gneiss		SS -2	14.5	3-5-9 (14)		
20		- dry, very hard, SAA; more compact wtih better foliation than previous samples; less sand		SS -3	19.5	17-24-27 (51)		
25				SS	24.5	50		

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SOUTHERN COMPANY

BORING LOG

BORING B-26

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

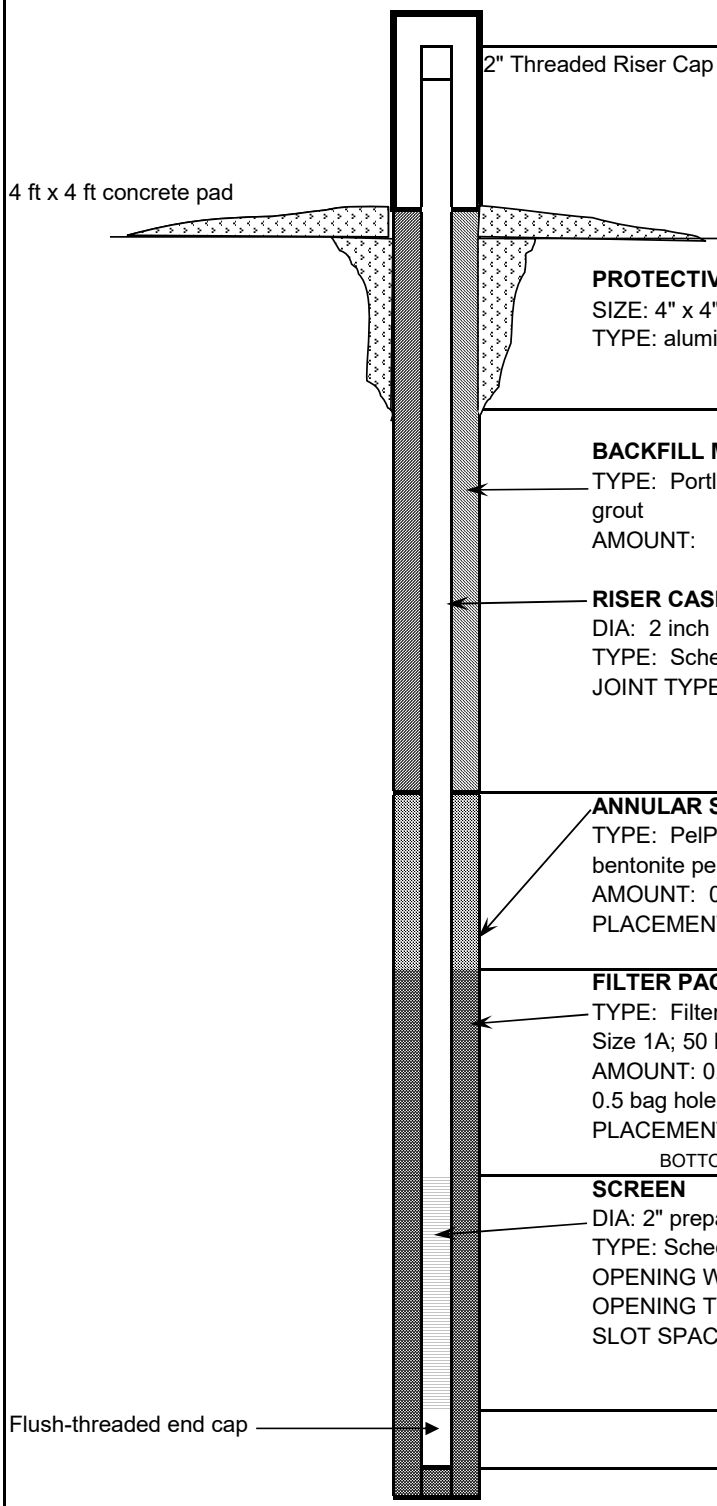
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)*		-4		(0)		
		- dry, very hard, SAA; powdered rock	824.6	RC -1	26.0			
		Gneiss						
		- black and white, fine grain, medium hard to hard, slightly to moderately weathered, banded, GNEISS						
		- from 27.0' to 27.3 ' - soft, weathered, leached of biotite, stained below; 1.4" thick augen						
		- 1/2" thick augen with remnant, healed fractures across foliation at 28'; slight staining on joint across foliation from 28.6' to 28.7'		RC -2	28.9			
30		- stain on joints, one joint on foliation and one joint across foliation at 29.3' to 29.7'						
		- 3 stained and leached, weathered joints from 31.4' to 32.2'; augen						
		- 3 stained joints across foliation from 32.7' to 33.0', including a soil coated joint at 33'						
		- slightly stained joints on foliation at 33.1', 33.6', and 34.1' to 34.7'		RC -3	33.9			
35		- stained, leached, weathered zone with many 1/4" quartz phenocysts from 35.8' to 36.6'						
		- soft weathered zone with staining from 39.0' to 39.7'		RC -4	39.0			
40		- heavily stained, soft joints across foliation at 41.3'						
		- 1/2" augen at 42.0'						
		- weathered broken zone from 43.6' to 44.1'		RC -5	44.1			
45		- below 44.1' heavily stained with many quartz phenocycts						
		- stained joint across foliation at 45.5'						
			801.3					
50		Bottom of borehole at 49.3 feet.						

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	B-26
LOGGER: Ben Gallagher	DRILLING METHODS: HS Auger/HQ Rock Core	
DATE CONSTRUCTED: 10/23/2012	N: 1393105.6 E:2201550.4	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-3.0	853.6
GROUND SURFACE	0.0	850.6
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 7 bags cement 10 lbs bentonite **RISER CASING** DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	30.5	820.1
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 0.25 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	34.8	815.8
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 0.5 Bag filter pac 0.5 bag hole PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	38.9	811.7
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	48.9	801.7
BOTTOM OF CASING	49.3	801.3

HOLE DIA: 7 inch (auger)
3.8 inch (HQ core)

Location resurveyed June - July 2020

SOUTHERN COMPANY

BORING LOG

BORING B-28
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SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 10/30/2012 **COMPLETED** 10/30/2012 **GROUND ELEVATION** 813.3 ft **COORDINATES** N 1391967.4 E 2201679.2

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit; HQ Rock Core **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** D. Brooks **CHECKED BY** _____ **BORING DEPTH** 94.3 ft.

GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** _____

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 9.5 ft						
10		**Gneiss** - no recovery; encountered boulder	803.8	SS -1	9.5			
		Silty Sand (SM)	802.3					
15		- green and black, saprolite; relict structure present		SS -2	14.5			
20		- brown and tan, damp, silty SAND; micaceous; fine-grained		SS -3	19.5			
25				SS	24.5	4-5-7		

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

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SOUTHERN COMPANY

BORING LOG

BORING B-28

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silty Sand (SM)*(con't)* - SC-SM: tan, orange, and black, damp, medium dense, silty, clayey SAND; fine to very fine-grained		-4		(12)		
30		- medium dense, SAA; micaceous; clay content increases		SS -5	29.5	7-7-7 (14)		
			778.8	SS -6	34.5	5-16-23 (39)		
35		**Silt (ML)** - green and black, damp, hard, sandy SILT; relict structure present						
40		- tan, orange, and black, stiff, sandy SILT; micaceous; some relict structure		SS -7	39.5	5-5-6 (11)		
45		- hard, SAA		SS -8	44.5	7-16-20 (36)		
50		- very hard, SAA		SS -9	49.5	20-20 (20)		

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

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SOUTHERN COMPANY

BORING LOG

BORING B-28

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55		**Silt (ML)***(con't)*		SS -10	54.5	50 (0)		
		- very hard, minimal recovery; partially weathered rock						
			754.1	RC -1	59.2			
60		**Gneiss**						
		- black and gray, mylonite GNEISS (schistic zone); weathering noted along small joints and along foliations (saprock), otherwise fresh; no staining seen						
				RC -2	64.3			
65		- black and gray, hard, mylonite GNEISS; fresh						
				RC -3	69.3			
70		- SAA						
				RC -4	74.3			
75		- SAA						
				RC -5	79.3			
80		- SAA with small iron-stained joint at 83'						

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

(Continued Next Page)

SOUTHERN COMPANY

BORING LOG

BORING B-28

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

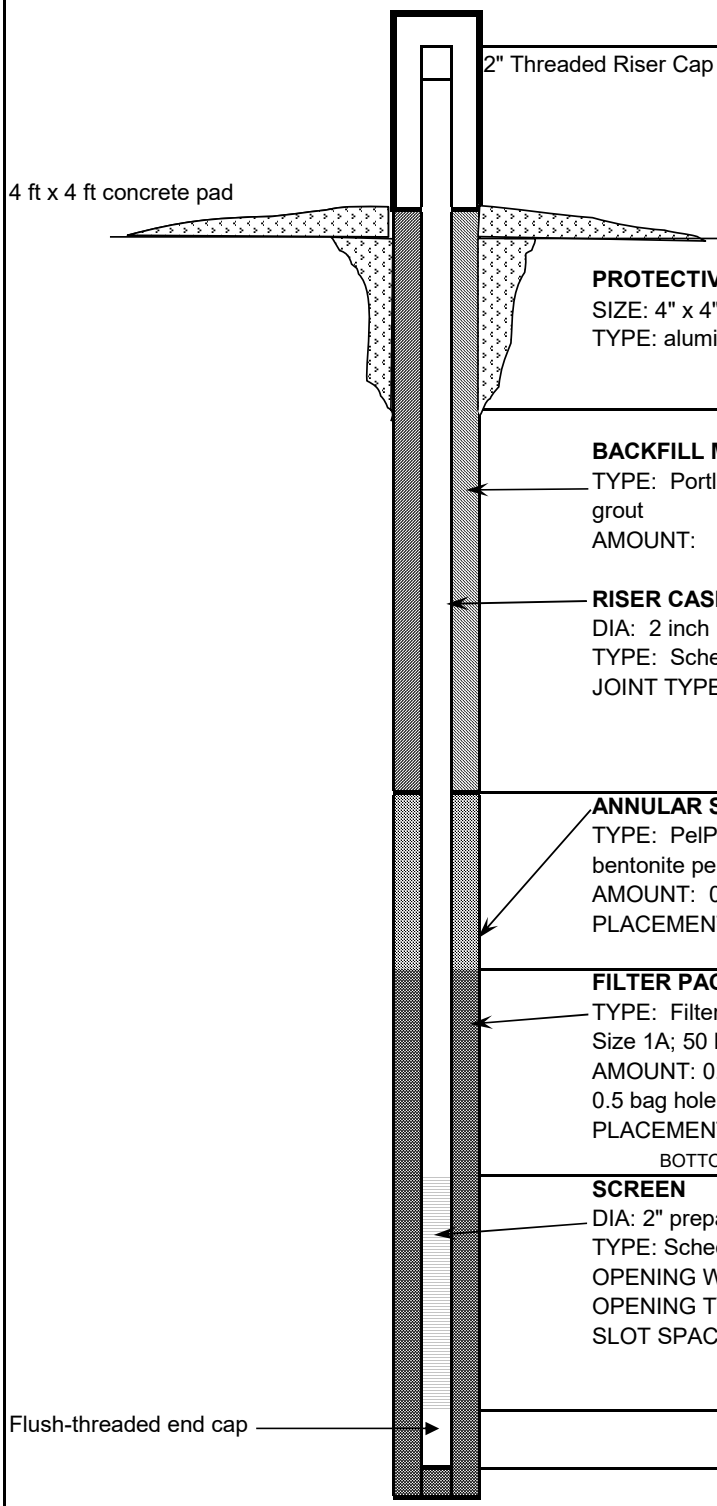
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
85		**Gneiss***(con't)*		RC -6	84.3			
90				RC -7	89.3			
		- black and gray, hard, GNEISS; fresh	719.0					
95		Bottom of borehole at 94.3 feet.						
100								
105								
110								

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	B-28
LOGGER: Dustin Brooks	DRILLING METHODS: HS Auger/HQ Rock Core	
DATE CONSTRUCTED: 10/31/2012	N: 1391967.4 E: 2201679.2	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.8	816.08
2" Threaded Riser Cap		
GROUND SURFACE	0.0	813.3
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 14 bags cement 19 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	53.0	760.3
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 0.5 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	55.6	757.7
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 0.5 Bag filter pac 0.5 bag hole PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	59.0	754.3
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	69.0	744.3
BOTTOM OF CASING	69.4	743.9

HOLE DIA: 7 inch (auger)
3.8 inch (HQ core)

SOUTHERN COMPANY

BORING LOG

BORING B-29

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 1/10/2012 **COMPLETED** 1/11/2012 **GROUND ELEVATION** 813.5 ft **COORDINATES** N 1391890 E 2201422

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** G. Dyer **CHECKED BY** _____ **BORING DEPTH** 55.7 ft.

GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** _____

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 10 ft						
10			803.5					
		Silt (ML)						
		- tan-red, damp, medium stiff, clayey SILT, no structures or staining		SS -1	12.0	2-2-4 (6)		residual soil.
15		- tan, brown, and orange-red, damp, stiff, SILT with clay; vertical manganese oxide bands; highly weathered relict structrure; slightly micaceous		SS -2	14.5	2-5-6 (11)		residual soil - upper saprolite.
20		- red, green and gray, very hard, sandy SILT; highly weathered schist fragments; relict structure intact; moderately to well cemented; trace partially weathered rock fragments		SS -3	19.5	9-28-29 (57)		lower saprolite.
25				SS	24.5	2-11-14		

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

(Continued Next Page)

SOUTHERN COMPANY

BORING LOG

BORING B-29

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)* - green-gray and tan, dry, very stiff, sandy SILT; moderately to well cemented; structure intact; lacks rock fragments; micaceous; trace quartz sand		-4		(25)		lower saprolite.
30		- green-gray, moist, very hard, GRAVEL and SILT; moderately weathered schist fragments		SS -5	29.5	28-50 (50)		lower saprolite/transitioning to saprock.
35		- very damp, very hard, SAA		SS -6	34.5	24-50 (50)		spoon moist to wet.
40		- dry, very hard, SAA		SS -7	39.5	50 (0)		saprock transition.
50		- green-gray, wet, very hard, fine SILT with gravel; noticeably softer than previous runs; isolated schist fragments near base; little to no structure		SS -8	49.5	11-29-50 (79)		noticable sound of water flowing.

(Continued Next Page)

SOUTHERN COMPANY

BORING LOG

BORING B-29

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

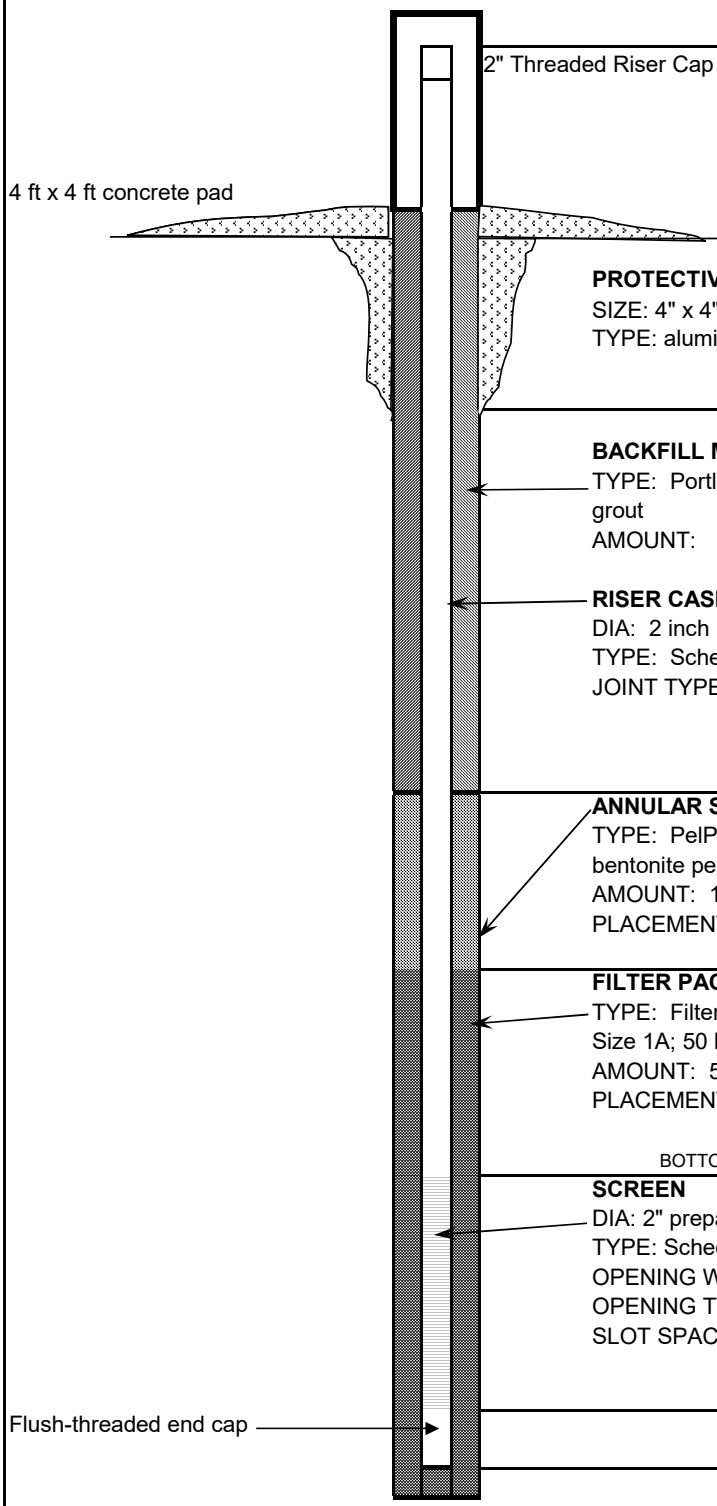
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55		- very hard, SAPROCK; schist fragments **Silt (ML)***(con't)*	757.8	SS -9	54.5	50 (0)		
		Bottom of borehole at 55.7 feet.						

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	B-29
LOGGER: Greg Dyer	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 1/11/2013	N: 1391890.0 E: 2201422.0	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.9	816.43
GROUND SURFACE	0.0	813.5
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 10 bags cement 13.5 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	40.0	773.5
ANNULAR SEAL TYPE: PelPlug TR-30 1/4" bentonite pellets; 5-gallon buckets AMOUNT: 1 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	42.0	771.5
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 5.5 Bags PLACEMENT: Poured w/water		
BOTTOM OF RISER / TOP OF SCREEN	44.1	769.4
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	54.1	759.4
BOTTOM OF CASING	54.4	759.1

BORING B-31

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 1/22/2013 **COMPLETED** 1/22/2013 **GROUND ELEVATION** 794.9 ft **COORDINATES** N 1392034.3 E 2200928.5

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit; HQ Rock Core **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** B. Gallagher **CHECKED BY** _____ **BORING DEPTH** 45.1 ft.

GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** _____

NOTES Drilled near North Abutment of Ash Pond 1 dike Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)						Vacuum excavation from 0 ft to 10 ft.
5								
10				SS -1	10.0	8-7-6 (13)		
		- white and tan, moist, foliated; saprolite						
15				SS -2	14.5	7-8-17 (25)		
20				SS -3	19.5	7-17-12 (29)		
		- tan, damp, stained below 20.5 ft						
25				SS	24.5	3-6-12		

(Continued Next Page)

SOUTHERN COMPANY

BORING B-31

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

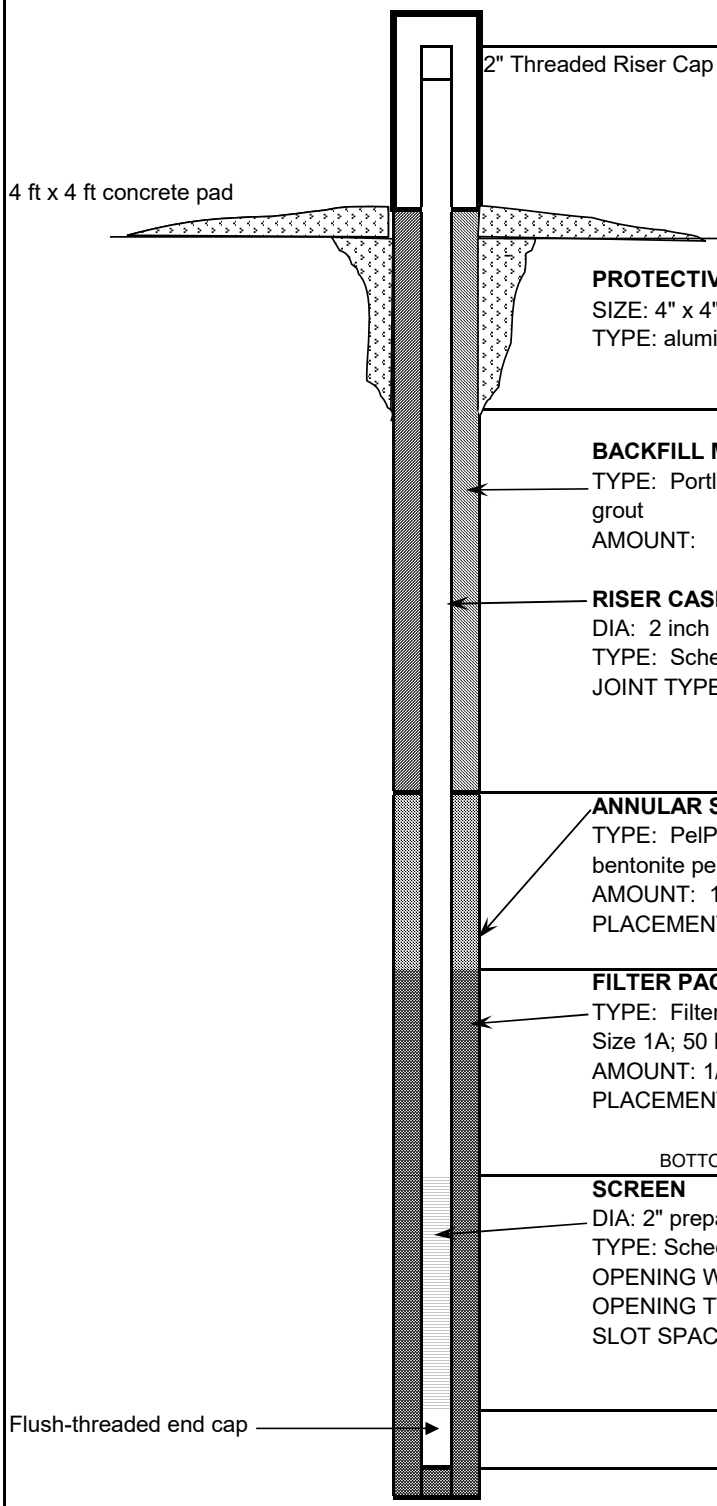
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)*		-4		(18)		
		- wet	768.4	RC -1	26.0			
		Gneiss						
		- black and white						
		- slightly weathred to fresh; w/????; hard ???? from 26.5 to 26.6 ft, 27.2 to 27.3 ft, 30.0 to 30.1 ft, and 31.4 to 32.4 ft		RC -2	28.7			
30								
		- soft, highly weathered with sand; stained from 32.4 to 33.5 ft						
		- 3 thick quartz intrusions/secondary fill; hard to soft; weathered; stained from 33.7 to 34.9 ft		RC -3	33.7			
35								
				RC -4	38.7			
40								
				RC -5	43.7			
45			749.8					
		Bottom of borehole at 45.1 feet.						
50								

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond 1	RIG TYPE: CME550	B-31
LOGGER: B. Gallagher	DRILLING METHODS: HS Auger/HQ Rock Core	
DATE CONSTRUCTED: 1/22/2013	N: 1392034.3 E:2200928.5	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.6	797.47
2" Threaded Riser Cap		
GROUND SURFACE	0.0	794.9
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 5 bags cement 8 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	25.7	769.2
ANNULAR SEAL TYPE: PelPlug TR-30 1/4" bentonite pellets; 5-gallon buckets AMOUNT: 1/4 bucket PLACEMENT: Poured		
TOP OF FILTER PACK	29.1	765.8
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 1/2 Bags PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	34.7	760.2
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	44.7	750.2
BOTTOM OF CASING	45.1	749.8

HOLE DIA: 7 inch (auger)
3.8 inch (HQ core)

Location resurveyed June - July 2020

SOUTHERN COMPANY

BORING LOG

BORING B-41
Page 1 of 3

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DATE STARTED 11/13/2012 **COMPLETED** 11/14/2012 **GROUND ELEVATION** 792.4 ft **COORDINATES** N 1390920.8 E 2201751.9

CONTRACTOR SCS Field Services **METHOD** 4.25" Hollow Stem Auger w/pilot bit **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** C. Sellers **CHECKED BY** _____ **BORING DEPTH** 61 ft.

GROUND WATER DEPTH: DURING 35 ft. **COMP.** _____ **DELAYED** _____

NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Vacuum excavation from 0 ft to 9.5 ft						
10		**Lean Clay (CL)** - light tan/orange, very soft, silty CLAY (fill for parking lot)	782.9	SS -1	9.5	WH-WH-1 (1)		
15		**Silt (ML)** - no recovery - medium stiff	777.9	SS -2	14.5	3-2-4 (6)		
20		- brownish orange, dry, stiff, clayey SILT with mica		SS -3	19.5	4-4-5 (9)		
25				SS	24.5			

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 8/26/20 20:44 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\MW LOGS_SURVEY UPDATED.GPJ

(Continued Next Page)

SOUTHERN COMPANY

BORING LOG

BORING B-41

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silt (ML)*(con't)*		-4				
		- light tan, SILT; micaceous						
30				SS -5	29.5	2-4-9 (13)		
		- stiff, SAA; with very fine-grained sand						
35		▽ - wet, medium stiff, SAA		SS -6	34.5	2-2-3 (5)		
40		- brown, wet, stiff, SILT with fine to very fine sand		SS -7	39.5	2-3-6 (9)		
45		- stiff, SAA		SS -8	44.5	2-5-7 (12)		
50		- light tan, damp, hard, sandy SILT (saprolite); fine to very fine-grained sand		SS -9	49.5	11-18-23 (41)		

(Continued Next Page)

SOUTHERN COMPANY

BORING LOG

BORING B-41

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

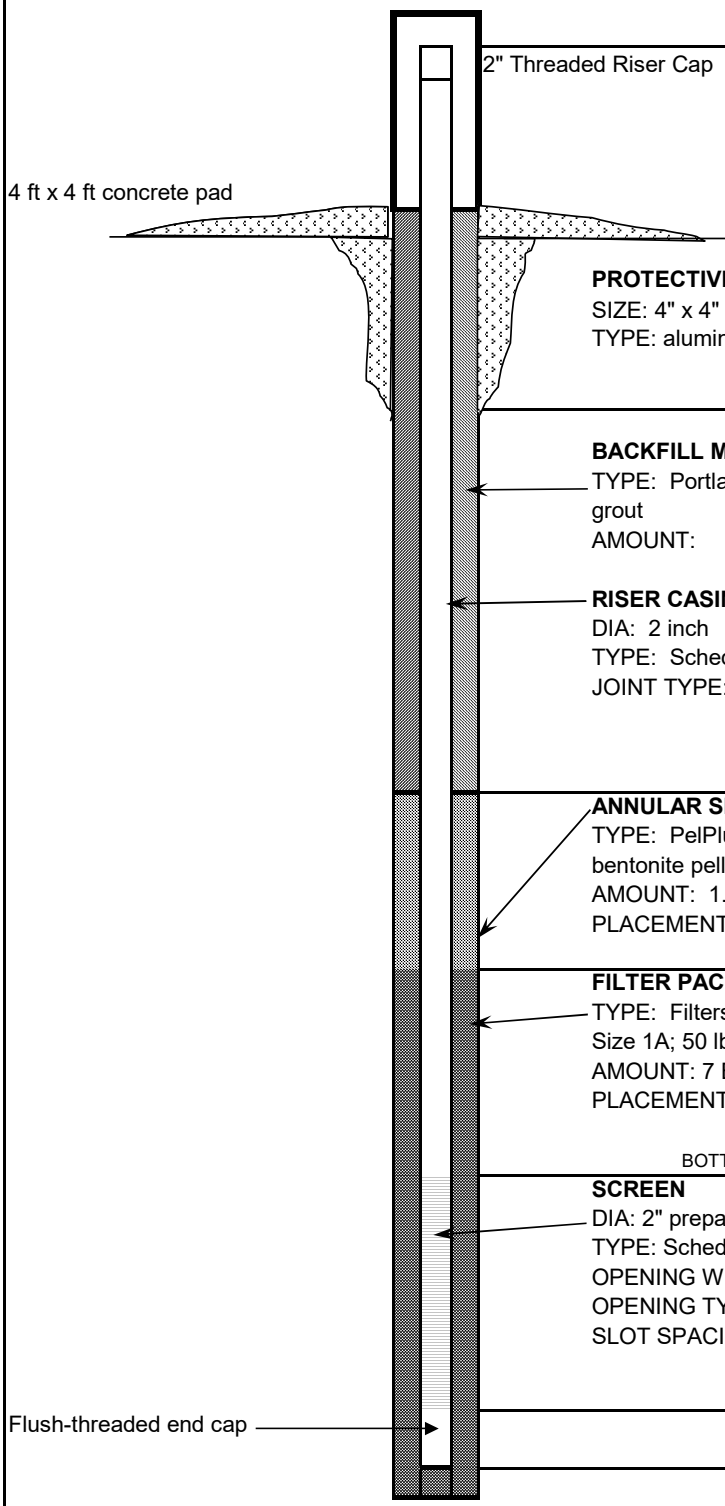
PROJECT Plant McDonough Hydrogeological Investigation
LOCATION Cobb County, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55		**Silt (ML)***(con't)*		SS -10	54.5	10-17-26 (43)		
		- light tan, damp, hard, SILT; contains fine to very fine-grained sand and angular quartz gravel						
60		- light tan, damp, saprolite; contains fine to medium-grained sand		SS -11	59.5	11-24-50 (74)		
			731.4					
		Bottom of borehole at 61.0 feet.						
65								
70								
75								
80								

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS Field Services	WELL NAME
Hydrogeologic Investigation	DRILLER: S. Denty	
LOCATION: Ash Pond	RIG TYPE: CME550	B-41
LOGGER: Cale Sellers	DRILLING METHODS: HS Auger	
DATE CONSTRUCTED: 11/14/2012	N: 1390920.8 E:2201751.9	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.8	795.2
2" Threaded Riser Cap		
GROUND SURFACE	0.0	792.4
PROTECTIVE CASING SIZE: 4" x 4" TYPE: aluminum		
BOTTOM OF GROUT		
BACKFILL MATERIAL TYPE: Portland cement/bentonite grout AMOUNT: 7 bags cement 10 lbs bentonite		
RISER CASING DIA: 2 inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	45.2	747.2
ANNULAR SEAL TYPE: PelPlug TR-30 3/8" bentonite pellets; 5-gallon buckets AMOUNT: 1.25 buckets PLACEMENT: Tremie		
TOP OF FILTER PACK	47.3	745.1
FILTER PACK TYPE: Filtersil #61 Size 1A; 50 lbs/bag AMOUNT: 7 Bags PLACEMENT: Tremie		
BOTTOM OF RISER / TOP OF SCREEN	49.4	743.0
SCREEN DIA: 2" prepack (3.45" OD) TYPE: Schedule 40 PVC OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.1 inch		
BOTTOM OF SCREEN	59.4	733.0
BOTTOM OF CASING	60.0	732.4

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-50

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 36.00 ft
LOCATION: Smyrna, GA

DRILL RIG: 100C Track Mounted Rig
DATE STARTED: 6/24/16
DATE COMPLETED: 6/24/16

NORTHING: 1,391,657.10
EASTING: 2,201,841.00
GS ELEVATION: 809.2
TOC ELEVATION: 809.67 ft

DEPTH W.L.: 20.8
ELEVATION W.L.: 788.4
DATE W.L.: 6/24/2016
TIME W.L.: 10:50

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLES SAMPLE NO.	SAMPLES TYPE	SAMPLES REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0	809	0.00 - 12.00 SILT; grayish brown, dry, soft (fill)	ML						Portland Type I/Protective Casing	**WELL CASING** Interval: 0'-35.2' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush threaded with O-ring
5	805									**WELL SCREEN** Interval: 24.8'-34.8' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC
10	800								Portland Type I/ Type II/ Bentonite Gel mix	**FILTER PACK** Interval: 21.8'-36' Type: Filtersil std61
					797.2					**FILTER PACK SEAL** Interval: 15.9'-21.8' Type: 3/8" Bentonite Pellets
		12.00 - 29.50 SILT; organish gray, some fine to coarse sand, micaceous, moist to wet, soft to firm (saprolite)			12.00					**ANNULUS SEAL** Interval: 3'-15.9' Type: Portland Type I/Type II/Bentonite Gel Mix
15	795									**WELL COMPLETION** Pad: 4'x4'x4" Protective Casing: Aluminum
20	790		ML						3/8" Bentonite Pellets	**DRILLING METHODS** Soil Drill: Sonic Rock Drill: Sonic
									Filtersil std #61	
25	785									
					779.7					
30	780	29.50 - 36.00 SILTY SAND; brownish gray, fine sand, wet, very soft			29.50				0.010" slot screen	
35	775		SM						Sump	
					773.2					
		Boring completed at 36.00 ft								
40	770									
45	765									

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Bill Lindsey

GA INSPECTOR: K. Jurinko, PG
CHECKED BY: Rachel P. Kirkman, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-51

SHEET 1 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 66.00 ft
LOCATION: Smyrna, GA

DRILL RIG: 100C Track Mounted Rig
DATE STARTED: 6/27/16
DATE COMPLETED: 6/27/16

NORTHING: 1,390,501.20
EASTING: 2,200,906.50
GS ELEVATION: 763.3
TOC ELEVATION: 765.92 ft

DEPTH W.L.: 8.85
ELEVATION W.L.: 754.45
DATE W.L.: 6/28/2016
TIME W.L.: 13:22

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0	760	0.00 - 3.00 SILT; brown, some fine to coarse sand, dry, soft, micaceous (topsoil)	ML		760.3				Portland Type I/ _ Alumiumum Casing	**WELL CASING** Interval: 0'-65' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush threaded with O-ring
5	755	3.00 - 15.00 SILT; red to reddish brown, some fine to coarse gravel, black, subrounded, some clayey silt, orangish white and balck, dry, soft, micaceous (saprolite)	ML		3.00					**WELL SCREEN** Interval: 55'-65' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC
10	750									**FILTER PACK** Interval: 53'-65.4' Type: Filtersil std61
15	745	15.00 - 58.00 SILT and SAND; orangish brown, brown, and grey, fine to medium sand, some laminations and black mottling, micaceous, some biotite schist gravel, fine to coarse, dry to wet, very soft to very stiff	SP-SM		748.3 15.00				Portland Type I/ Type _ II/ Bentonite Gel mix	**FILTER PACK SEAL** Interval: 47.5'-53' Type: 3/8" Bentonite Pellets **ANNULUS SEAL** Interval: 3'-47.5' Type: Portland Type I/Type II/Gel Mix **WELL COMPLETION** Pad: 4'x4'x4" Protective Casing: Aluminum **DRILLING METHODS** Soil Drill: Sonic Rock Drill: Sonic
20	740									
25	735									
30	730									
35	725									
40	720									
45		Log continued on next page								

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Scotty Vermillion

GA INSPECTOR: K. Jurinko, PG
CHECKED BY: Rachel P. Kirkman, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-51

SHEET 2 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 66.00 ft
LOCATION: Smyrna, GA

DRILL RIG: 100C Track Mounted Rig
DATE STARTED: 6/27/16
DATE COMPLETED: 6/27/16

NORTHING: 1,390,501.20
EASTING: 2,200,906.50
GS ELEVATION: 763.3
TOC ELEVATION: 765.92 ft

DEPTH W.L.: 8.85
ELEVATION W.L.: 754.45
DATE W.L.: 6/28/2016
TIME W.L.: 13:22

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
45		15.00 - 58.00 SILT and SAND; orangish brown, brown, and grey, fine to medium sand, some laminations and black mottling, micaceous, some biotite schist gravel, fine to coarse, dry to wet, very soft to very stiff *(Continued)*	SP-SM						3/8" Bentonite Pellets Filtersil std #61 0.010" slot screen Sump	**WELL CASING** Interval: 0'-65' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush threaded with O-ring **WELL SCREEN** Interval: 55'-65' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC **FILTER PACK** Interval: 53'-65.4' Type: Filtersil std61 **FILTER PACK SEAL** Interval: 47.5'-53' Type: 3/8" Bentonite Pellets **ANNULUS SEAL** Interval: 3'-47.5' Type: Portland Type I/Type II/Gel Mix **WELL COMPLETION** Pad: 4'x4'x4" Protective Casing: Aluminum **DRILLING METHODS** Soil Drill: Sonic Rock Drill: Sonic
50	715									
55	710									
60	705	58.00 - 66.00 biotite SCHIST; some clayey silt and sand to gravel, coarse-grained, gray, orange staining, micaceous, dry to wet, very stiff (saprock)	PWR		705.3 58.00					
65	700				697.3					
70	695	Boring completed at 66.00 ft								
75	690									
80	685									
85	680									
90	675									

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Scotty Vermillion

GA INSPECTOR: K. Jurinko, PG
CHECKED BY: Rachel P. Kirkman, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-52

SHEET 1 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 50.00 ft
LOCATION: Northside of the Lab Parking lot

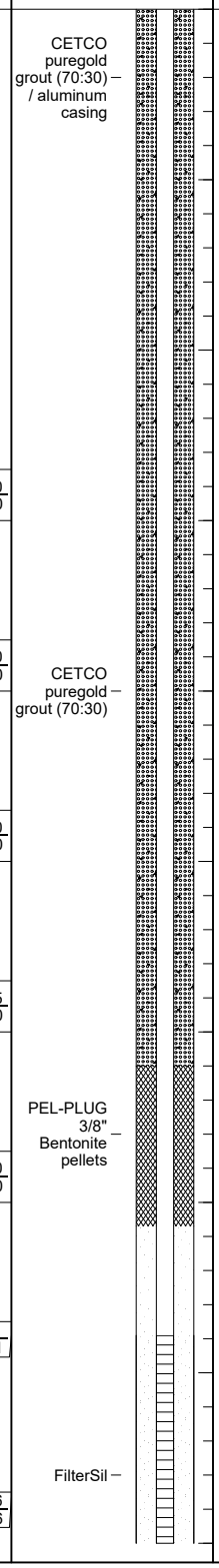
DRILL RIG: CME 55
DATE STARTED: 9/27/16
DATE COMPLETED: 9/28/16

NORTHING: 1,392,308.30
EASTING: 2,201,314.80
GS ELEVATION: 820.3
TOC ELEVATION: 822.89 ft

DEPTH W.L.: 25.72
ELEVATION W.L.: 794.58
DATE W.L.: 10/6/2016
TIME W.L.: 1330

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	820	0.00 - 10.00 Top 10' were Hydrovac for utilities.								
					810.3					
10	810	10.00 - 15.00 SM, silty SAND, fine to medium grained, non to low plasticity, tan, non-cohesive, dry, W<PL, loose	SM		10.00					
					805.3	1	DO	8-8-4	12	1.50 / 1.50
15	805	15.00 - 33.50 ML, SILT with some SAND, fine to coarse, non to moderate plasticity, orange-brown to white to silver, slightly weathered, highly micaeous, cohesive, dry to wet (increasing with detpth), W<PL, firm to stiff, PWR.	ML		15.00					
						2	DO	7-9-8	17	1.50 / 1.50
20	800									
						3	DO	7-13-11	24	1.50 / 1.50
25	795									
						4	DO	18-50/3	68/9	0.75 / 1.50
30	790									
					786.8					
		33.50 - 50.00 SM, silty SAND, fine to coarse, non to moderate plasticity, trace rock fragments, yellow-orange, non-cohesive, dry to moist, W<PL, compact to very dense, PWR			33.50	5	DO	17-20-50/4	70/10	1.50 / 1.50
35	785		SM							
						6	DO	50/5	50/5	0.41 / 0.41
40	780									
						7	DO	50/2	50/2	0.16 / 0.16
45		Log continued on next page								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-38.9
Material: Schedule 40 PVC
Diameter: 2
Joint Type: FLUSH/SCREW

WELL SCREEN
Interval: 38.9'-48.9'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 35.7-50'
Type: FilterSil

FILTER PACK SEAL
Interval: 31.0-35.7
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0-31'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: Shawn Milam

GA INSPECTOR: Michael Boatman, PG
CHECKED BY: Timothy Richards, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-52

SHEET 2 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 50.00 ft
LOCATION: Northside of the Lab Parking lot

DRILL RIG: CME 55
DATE STARTED: 9/27/16
DATE COMPLETED: 9/28/16

NORTHING: 1,392,308.30
EASTING: 2,201,314.80
GS ELEVATION: 820.3
TOC ELEVATION: 822.89 ft

DEPTH W.L.: 25.72
ELEVATION W.L.: 794.58
DATE W.L.: 10/6/2016
TIME W.L.: 1330

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES
45	775	33.50 - 50.00 SM, silty SAND, fine to coarse, non to moderate plasticity, trace rock fragments, yellow-orange, non-cohesive, dry to moist, W<PL, compact to very dense, PWR *(Continued)*	SM								0.010 Slotted Screen
						8	DO	50/3	50/3	0.25 0.25	
50	770	Boring completed at 50.00 ft			770.3						
55	765										
60	760										
65	755										
70	750										
75	745										
80	740										
85	735										
90											

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-38.9
Material: Schedule 40 PVC
Diameter: 2
Joint Type: FLUSH/SCREW

WELL SCREEN
Interval: 38.9'-48.9'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 35.7-50'
Type: FilterSil

FILTER PACK SEAL
Interval: 31.0-35.7
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0-31'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: Shawn Milam

GA INSPECTOR: Michael Boatman, PG
CHECKED BY: Timothy Richards, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-54

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 34.20 ft
LOCATION: Eastside of the stream north of AP4

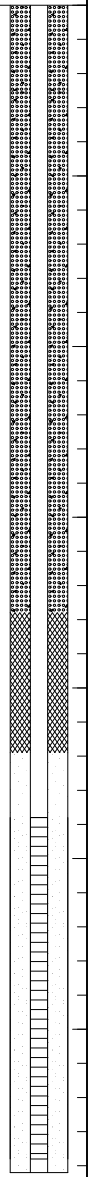
DRILL RIG: CME 55
DATE STARTED: 9/26/16
DATE COMPLETED: 9/26/16

NORTHING: 1,394,423.50
EASTING: 2,203,140.70
GS ELEVATION: 782.6
TOC ELEVATION: 785.46 ft

DEPTH W.L.: 4.56
ELEVATION W.L.: 778.04
DATE W.L.: 10/6/2016
TIME W.L.: 839

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	780	0.00 - 13.50 Top 10' were Hydrovac for utilities.								
5	775									
10	770				769.1					
15	765	13.50 - 28.50 SM, silty SAND, fine to coarse, non to low plasticity; white to gray, weathered, well foliated gneissic saprolite; cohesive, moist, w<PL, stiff.	SM		13.50	1	DO	6-7-6	13	0.83 1.50
						2	DO	5-9-8	17	1.33 1.50
20	760									
25	755				754.1	3	DO	4-5-11	15	0.00 1.50
30	750	28.50 - 29.00 GPS, poorly-graded sandy GRAVEL, fine to coarse, non plastic, some silt; white to tan to pink, K-spar and Quartz; non-cohesive, wet, w<PL, dense., PWR. Auger Refusal at 29.0 29.00 - 34.20 Bedrock; AUGEN GNEISS; fresh to slightly weathered, well foliated, gray, fine grained, medium strong to strong, (locally contains pegamitite zones). Boring completed at 34.20 ft	GP-GM BR		753.6 29.00 748.4	4	DO	21-50/1	71/7	0.50 0.58
35	745									
40	740									
45										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-23.8'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 23.8'-33.8'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 21.9'-34.2'
Type: FilterSil

FILTER PACK SEAL
Interval: 17.8'-21.9'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0-17.8'
Type: Portland Type I/Type II/Gel Mix

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: HQ Core Barrell

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Terracon
DRILLER: Shep Becker

GA INSPECTOR: Michael Boatman, PG
CHECKED BY: Timothy Richards, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-55

SHEET 1 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 52.00 ft
LOCATION: West of the cement plant

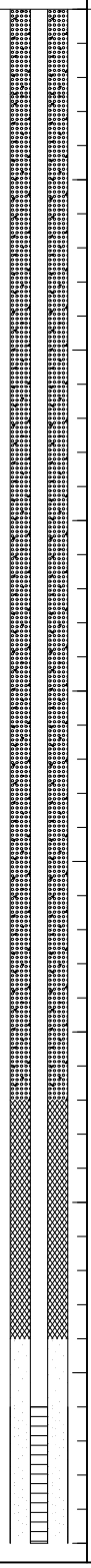
DRILL RIG: CME 55
DATE STARTED: 9/21/16
DATE COMPLETED: 9/22/16

NORTHING: 1,394,142.60
EASTING: 2,204,147.90
GS ELEVATION: 822.9
TOC ELEVATION: 825.12 ft

DEPTH W.L.: 12.05'
ELEVATION W.L.: 810.85
DATE W.L.: 10/6/2016
TIME W.L.: 850

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	820	0.00 - 3.50 SM, silty SAND, non to low plasticity; red-brown; cohesive, moist, w<PL, soft.	SM		819.4	1	DO	4-8-11	19	0.75 / 1.50
5	815	3.50 - 13.50 ML, SILT, trace to some sand and clay, non to low plasticity; light brown to red-brown to silverish gray; cohesive, dry to moist, w<PL, soft to firm.	ML		3.50	2	DO	7-7-9	16	1.00 / 1.50
						3	DO	7-11-12	23	1.33 / 1.50
						4	DO	5-8-11	19	1.50 / 1.50
10	810				809.4					
15	805	13.50 - 23.50 ML, SILT, trace fine to coarse sand, non plastic; light brown, deeply weathered, foliated, schist saprolite; cohesive, dry to moist, w<PL, soft to firm.	ML		13.50	5	DO	8-17-24	41	1.50 / 1.50
						6	DO	9-10-11	21	1.50 / 1.50
20	800				799.4					
25	795	23.50 - 52.00 ML, SILT, some sand, non plastic; light brown to tan to silverish gray, schist saprolite; cohesive, moist to wet (increases with depth), w<PL, soft to firm.	ML		23.50	7	DO	5-12-12	24	1.50 / 1.50
						8	DO	8-12-15	27	1.50 / 1.50
30	790									
						9	DO	9-14-17	31	1.50 / 1.50
35	785									
						10	DO	10-12-16	28	1.50 / 1.50
40	780									
						11	DO	7-12-23	35	1.50 / 1.50
45		Log continued on next page								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'- 41'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 41' - 51'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 39'-52'
Type: FilterSil

FILTER PACK SEAL
Interval: 32'-39'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-32'
Type: Portland Type I/Type II/Gel Mix

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Terracon
DRILLER: Shep Becker

GA INSPECTOR: Michael Boatman, PG
CHECKED BY: Timothy Richards, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-55

SHEET 2 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 52.00 ft
LOCATION: West of the cement plant

DRILL RIG: CME 55
DATE STARTED: 9/21/16
DATE COMPLETED: 9/22/16

NORTHING: 1,394,142.60
EASTING: 2,204,147.90
GS ELEVATION: 822.9
TOC ELEVATION: 825.12 ft

DEPTH W.L.: 12.05'
ELEVATION W.L.: 810.85
DATE W.L.: 10/6/2016
TIME W.L.: 850

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
45		23.50 - 52.00 ML, SILT, some sand, non plastic; light brown to tan to silverish gray, schist saprolite; cohesive, moist to wet (increases with depth), w<PL, soft to firm. *(Continued)*	ML								0.010 Slotted Screen	**WELL CASING** Interval: 0'- 41' Material: Schedule 40 PVC Diameter: 2 Joint Type: Flush/Screw **WELL SCREEN** Interval: 41' - 51' Material: Schedule 40 PVC Diameter: 2 Slot Size: 0.010 End Cap: Schedule 40 PVC **FILTER PACK** Interval: 39'-52' Type: FilterSil **FILTER PACK SEAL** Interval: 32'-39' Type: PEL-PLUG 3/8" Bentonite pellets **ANNULUS SEAL** Interval: 0'-32' Type: Portland Type I/Type II/Gel Mix **WELL COMPLETION** Pad: 2' x 2' concrete Protective Casing: 4"x4"x5' aluminum **DRILLING METHODS** Soil Drill: Hollow-stem auger Rock Drill: N/A
50	775				770.9							
		Boring completed at 52.00 ft										
55	770											
60	765											
65	760											
70	755											
75	750											
80	745											
85	740											
90	735											

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Terracon
DRILLER: Shep Becker

GA INSPECTOR: Michael Boatman, PG
CHECKED BY: Timothy Richards, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-56

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 45.00 ft
LOCATION: SW of the cement plant

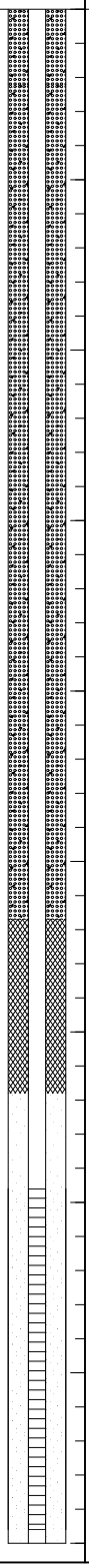
DRILL RIG: CME 55
DATE STARTED: 10/3/16
DATE COMPLETED: 10/3/16

NORTHING: 1,393,957.90
EASTING: 2,204,187.80
GS ELEVATION: 821.0
TOC ELEVATION: 823.59 ft

DEPTH W.L.: 16.39
ELEVATION W.L.: 804.61
DATE W.L.: 10/6/2016
TIME W.L.: 900

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	820	0.00 - 13.50 ML, SILT, trace fine sand, non to low plasticity; brownish red, micaceous, fill; cohesive, dry to moist, w<PL, firm.	ML							
						1	DO	2-5-5	10	1.08 / 1.50
5	815									
						2	DO	2-4-4	8	0.75 / 1.50
10	810									
					807.5					
		13.50 - 23.50 ML, SILT, trace fine to coarse sand, non to low plasticity; red to brown to black to silver, micaceous, schist/schistose gneiss saprolite; cohesive, mosit to wet, soft to stiff.	ML		13.50	3	DO	3-5-11	16	1.50 / 1.50
15	805									
						4	DO	3-5-9	16	1.50 / 1.50
20	800									
					797.5					
		23.50 - 45.00 ML, SILT, trace fine to coarse sand, non to low plasticity; brown to silvery brown, deeply weathered, micaceous, schist saprolite; cohesive, wet, w<PL, soft to firm. (locally contains pegmatite veins)	ML		23.50	5	DO	7-8-14	22	1.33 / 1.50
25	795									
						6	DO	7-6-12	18	1.33 / 1.50
30	790									
						7	DO	7-8-14	22	1.00 / 1.50
35	785									
						8	DO	14-32-50	82	1.00 / 1.50
40	780									
						9	DO	7-12-33	42	1.25 / 1.50
45		Boring completed at 45.00 ft			776					

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-34.6'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 34.6'-44.6'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 31.8' - 45'
Type: FilterSil

FILTER PACK SEAL
Interval: 26.7'-31.8'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-26.7'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: Michael Boatman, PG
CHECKED BY: Timothy Richards, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-57

SHEET 1 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 50.50 ft
LOCATION: North of the 4-wide construction trailer

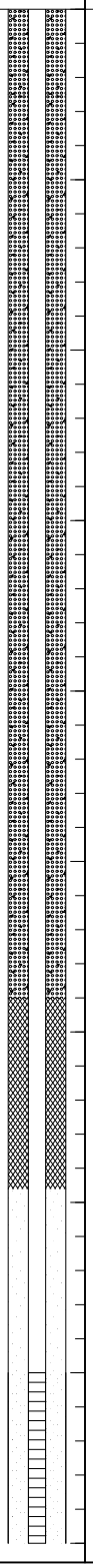
DRILL RIG: CME 55
DATE STARTED: 9/24/16
DATE COMPLETED: 9/24/16

NORTHING: 1,391,396.30
EASTING: 2,202,736.90
GS ELEVATION: 786.0
TOC ELEVATION: 789.04 ft

DEPTH W.L.: 21.49
ELEVATION W.L.: 764.51
DATE W.L.: 10/6/2016
TIME W.L.: 920

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	785	0.00 - 10.00 Boring was hydrovac'd to 10' bgs (material appears to be SM-ML)	SM-ML		776 / 10.00					
10	775	10.00 - 30.00 ML- Sandy Clayey SILT, fine to coarse sand, some fine gravel; reddish-brown to brown, dense, dry; micaceous, PWR	ML			1	DO	4-10-14	24	1.00 / 1.50
						2	DO	11-24-50/5	74/11	1.00 / 1.50
						3	DO	4-8-14	22	1.33 / 1.50
						4	DO	4-4-8	12	1.33 / 1.50
30	755	30.00 - 34.50 CL- Silty CLAY, SOME fine to medium SAND, trace gravel: brown; loose, W<PL; micaceous, PWR. Auger Refusal at 34.5	CL		756 / 30.00					
						5	DO	50/3	50/3	0.00 / 0.25
35	750	34.50 - 50.50 Bedrock; SCHIST; strong to very strong, light to dark gray with white and black laminations, sub-parallel; sightly weathered top with red oxidation on fractured surfaces to fresh and unfractured at the bottom.	BR		751.5 / 34.50					
40	745									
45		Log continued on next page								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-40'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 40'-50'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 34.6'-50.5'
Type: FliterSil

FILTER PACK SEAL
Interval: 29'-34.6'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-29'
Type: Portland Type I/Type II/Gel Mix

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: HQ Core Barrell

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Terracon
DRILLER: Shep Becker

GA INSPECTOR: Aubrey Ellis
CHECKED BY: Timothy Richards, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-57

SHEET 2 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 50.50 ft
LOCATION: North of the 4-wide construction trailer

DRILL RIG: CME 55
DATE STARTED: 9/24/16
DATE COMPLETED: 9/24/16

NORTHING: 1,391,396.30
EASTING: 2,202,736.90
GS ELEVATION: 786.0
TOC ELEVATION: 789.04 ft

DEPTH W.L.: 21.49
ELEVATION W.L.: 764.51
DATE W.L.: 10/6/2016
TIME W.L.: 920

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES
45	740	34.50 - 50.50 Bedrock; SCHIST; strong to very strong, light to dark gray with white and black laminations, sub-parallel; sightly weathered top with red oxidation on fractured surfaces to fresh and unfractured at the bottom. *(Continued)*	BR								
50	735				735.5						
		Boring completed at 50.50 ft									
55	730										
60	725										
65	720										
70	715										
75	710										
80	705										
85	700										
90											

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-40'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 40'-50'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 34.6'-50.5'
Type: FliterSil

FILTER PACK SEAL
Interval: 29'-34.6'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-29'
Type: Portland Type I/Type II/Gel Mix

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: HQ Core Barrell

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Terracon
DRILLER: Shep Becker

GA INSPECTOR: Aubrey Ellis
CHECKED BY: Timothy Richards, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-58

SHEET 1 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 45.00 ft
LOCATION: SW corner of the new overflow parking lot of the NEW admin building

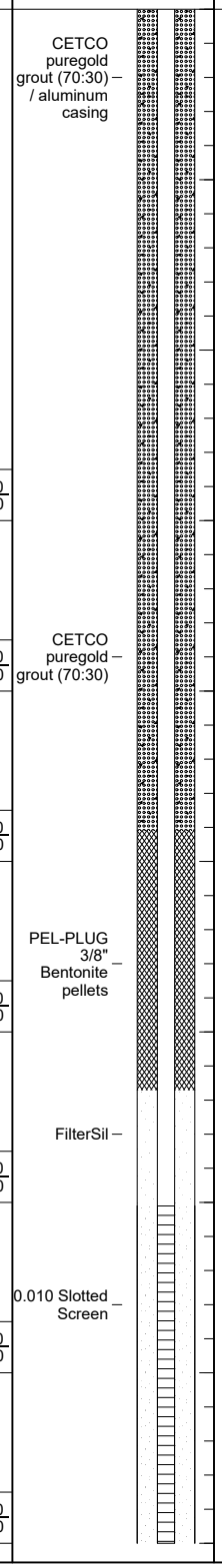
DRILL RIG: CME 55
DATE STARTED: 9/22/16
DATE COMPLETED: 9/23/16

NORTHING: 1,391,125.70
EASTING: 2,202,426.50
GS ELEVATION: 785.2
TOC ELEVATION: 788.17 ft

DEPTH W.L.: 22.30
ELEVATION W.L.: 762.9
DATE W.L.: 10/6/2016
TIME W.L.: 940

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	785	0.00 - 13.50 Top 10' were Hydrovac for utilities.			771.7					
		13.50 - 18.50 SC-SM, silty SAND/ clayly SAND, fine to coarse, low plasticity; red to red orang, fill; cohesive, moist, w<PL, soft to firm.	SC-SM		13.50 766.7	1	DO	5-6-7	13	1.50 / 1.50
		18.50 - 23.50 ML, SILT, trace sand, low to moderate plasticity; red orange, micaceous, fill; cohesive, moist, w<PL, soft to firm.	ML		18.50 761.7	2	DO	2-1-2	3	1.50 / 1.50
		23.50 - 28.50 ML, SILT, some fine sand, low plasticity; tan to white; cohesive, wet, w<PL (over saturated), soft.	ML		23.50 756.7	3	DO	2-3-3	6	1.50 / 1.50
		28.50 - 33.50 ML, SILT, non plastic; brown to silver, slight to deeply weathered, schistose gneiss saprolite; cohesive, wet, w<PL, firm to stiff.	ML		28.50 751.7	4	DO	4-7-9	16	1.50 / 1.50
		33.50 - 45.00 ML, SILT, trace to some sand, low to moderate plasticity; brown to dark brown, micaceous, schistose gneiss/shcist saprolite; cohesive, moist to wet, w<PL, soft to stiff.	ML		33.50	5	DO	1-4-7	11	1.50 / 1.50
						6	DO	3-6-11	17	1.50 / 1.50
						7	DO	3-7-12	19	1.50 / 1.50
45	740	Boring completed at 45.00 ft			740.2					

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'- 34.5'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 34.5'-44.5'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 31.7'-45.'
Type: FilterSil

FILTER PACK SEAL
Interval: 24.1'-31.7'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-24.1'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: Michael Boatman, PG
CHECKED BY: Timothy Richards, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-58

SHEET 2 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 45.00 ft
LOCATION: SW corner of the new overflow parking lot of the NEW admin building

DRILL RIG: CME 55
DATE STARTED: 9/22/16
DATE COMPLETED: 9/23/16

NORTHING: 1,391,125.70
EASTING: 2,202,426.50
GS ELEVATION: 785.2
TOC ELEVATION: 788.17 ft

DEPTH W.L.: 22.30
ELEVATION W.L.: 762.9
DATE W.L.: 10/6/2016
TIME W.L.: 940

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
45	740											
50	735											
55	730											
60	725											
65	720											
70	715											
75	710											
80	705											
85	700											
90												

WELL CASING
Interval: 0'- 34.5'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 34.5'-44.5'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 31.7'-45.'
Type: FilterSil

FILTER PACK SEAL
Interval: 24.1'-31.7'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-24.1'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: Michael Boatman, PG
CHECKED BY: Timothy Richards, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-59

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 30.25 ft
LOCATION: westside of the stream north of AP4

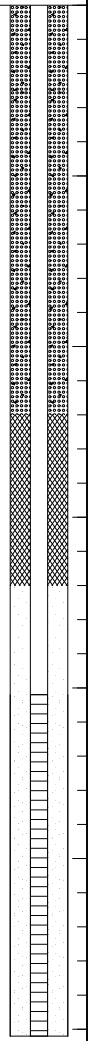
DRILL RIG: CME 55
DATE STARTED: 9/23/16
DATE COMPLETED: 9/23/16

NORTHING: 1,394,349.10
EASTING: 2,203,001.10
GS ELEVATION: 785.5
TOC ELEVATION: 788.00 ft

DEPTH W.L.: 5.56
ELEVATION W.L.: 779.94
DATE W.L.: 10/6/2016
TIME W.L.: 828

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	785	0.00 - 3.50 SC, clayly SAND, fine to coarse, non plastic; red, micaceous, fill; cohesive, dry, w<PL, stiff.	SC		782	1	DO	3-5-7	12	1.16 / 1.50
5	780	3.50 - 9.00 CH, CLAY, moderate to high plasticity; aark brown to red brown, fill; cohesive, moist, w>PL, soft.	CH		3.50 776.5	2	DO	2-1-1	2	0.75 / 1.50
10	775	9.00 - 14.00 SM, SAND and SILT, fine, trace organics, non to low plasticity; gray; cohesive, wet, w<PL, very soft.	SM		9.00 771.5	3	DO	WOH-1-1	2	1.50 / 1.50
15	770	14.00 - 19.00 SP-SW, moderate- graded SAND, fine to coarse, non plastic; tan to white; non-cohesive, wet, w<PL, loose.	SP-SW		14.00 766.5	4	DO	4-5-7	12	1.50 / 1.50
20	765	19.00 - 24.50 SM, silty SAND, low plasticity; gray to black, deeply weathered, gneissic saprolite; cohesive, moist to wet, w<PL, firm to very stiff, PWR. Auger Refusal at 24.3	SM		19.00 761	5	DO	5-4-5	9	1.00 / 1.50
25	760	24.50 - 30.25 Bedrock; AUGEN GNEISS; slighty weathered, foliated, gray to dark gray, fine to medium grained, medium strong.	BR		24.50 755.25	6	DO	50/4	50/4	0.66 / 0.33
30	755	Boring completed at 30.25 ft								
35	750									
40	745									
45										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-20.2'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 20.2'-30.2'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 17'-30.2'
Type: FilterSil

FILTER PACK SEAL
Interval: 12'-17'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-12'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: HQ Core Barrell

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: Michael Boatman, PG
CHECKED BY: Timothy Richards, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-60

SHEET 1 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 49.80 ft
LOCATION: Almost due south of B-58 ~ 300 to 400 feet

DRILL RIG: CME 55
DATE STARTED: 9/29/16
DATE COMPLETED: 9/29/16

NORTHING: 1,391,100.70
EASTING: 2,202,881.60
GS ELEVATION: 779.2
TOC ELEVATION: 782.13 ft

DEPTH W.L.: 33.35
ELEVATION W.L.: 745.85
DATE W.L.: 10/6/2016
TIME W.L.: 955

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0		0.00 - 13.50 Top 10' were Hydrovac for utilities.								
5	775									
10	770				765.7					
15	765	13.50 - 23.50 SC-SM, clayey SAND - silty SAND; brown to red brown; non-cohesive, moist, loose.	SC-SM		13.50	1	DO	4-3-4	7	0.66 1.50
20	760					2	DO	3-2-3	5	1.33 1.50
					755.7					
25	755	23.50 - 28.50 CL, silty CLAY, low plasticity; contains mica; moist, W<PL.	CL		23.50	3	DO	1-3-5	8	1.50 1.50
					750.7					
30	750	28.50 - 33.50 SC-SM, clayey SAND - silty SAND, fine grained, low to non-plastic; brown to gray; non-cohesive, moist, compact.	SC-SM		28.50	4	DO	2-8-10	18	1.50 1.50
					745.7					
35	745	33.50 - 48.50 SM, silty SAND; brown to red brown, saprolite; non-cohesive, moist to wet (increases with depth), dense, PWR.	SM		33.50	5	DO	50/4	50/4	0.33 0.33
40	740					6	DO	50/4	50/4	0.33 0.33
45	735					7	DO	50/4	50/4	0.25 0.33

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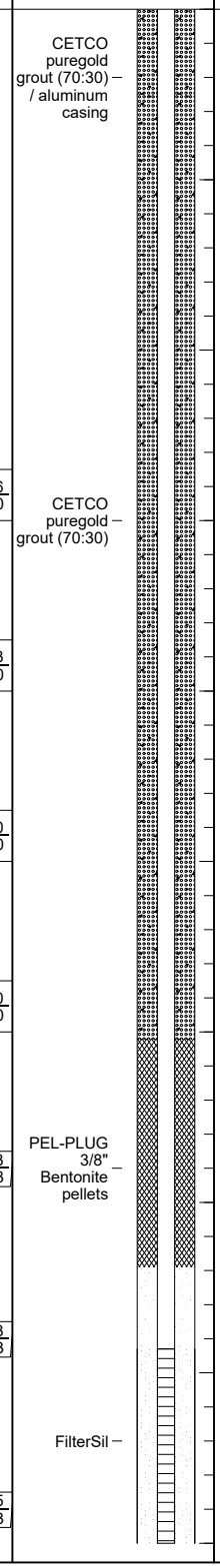
MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-39.3'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 39.3' - 49.3'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 36.9'-50'
Type: FilterSil

FILTER PACK SEAL
Interval: 30.2'-36.9'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-30.2'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: Nortey Yeboah
CHECKED BY: Timothy Richards, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-60

SHEET 2 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 49.80 ft
LOCATION: Almost due south of B-58 ~ 300 to 400 feet

DRILL RIG: CME 55
DATE STARTED: 9/29/16
DATE COMPLETED: 9/29/16

NORTHING: 1,391,100.70
EASTING: 2,202,881.60
GS ELEVATION: 779.2
TOC ELEVATION: 782.13 ft

DEPTH W.L.: 33.35
ELEVATION W.L.: 745.85
DATE W.L.: 10/6/2016
TIME W.L.: 955

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
45		33.50 - 48.50 SM, silty SAND; brown to red brown, saprolite; non-cohesive, moist to wet (increases with depth), dense, PWR. *(Continued)*	SM		730.7					
50	730	48.50 - 49.80 SM, silty SAND; gray to brown, saprolite, contains mica; non-cohesive, moist to wet (increases with depth), dense, PWR	SM		48.50 729.4	8	DO	50/3	50/3	0.16 0.25
		Boring completed at 49.80 ft								
55	725									
60	720									
65	715									
70	710									
75	705									
80	700									
85	695									
90	690									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES

0.010 Slotted Screen

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-39.3'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 39.3' - 49.3'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 36.9'-50'
Type: FilterSil

FILTER PACK SEAL
Interval: 30.2'-36.9'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-30.2'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: Nortey Yeboah
CHECKED BY: Timothy Richards, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-61

SHEET 1 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 52.40 ft
LOCATION: SSW of B-57. on the NE corner of the switch yard

DRILL RIG: CME 55
DATE STARTED: 9/28/16
DATE COMPLETED: 9/29/16

NORTHING: 1,390,957.80
EASTING: 2,202,505.80
GS ELEVATION: 779.0
TOC ELEVATION: 782.09 ft

DEPTH W.L.: 22.25
ELEVATION W.L.: 756.75
DATE W.L.: 10/6/2016
TIME W.L.: 950

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0		0.00 - 13.50 Top 10' were Hydrovac for utilities.								
5	775									
10	770									
					765.5					
15	765	13.50 - 18.50 CL-CH, CLAY, trace sand and silt, fine to coarse, moderate plasticity; dark red brown, fill; cohesive, moist, w~PL, soft.	CL-CH		13.50	1	DO	3-4-6	10	1.50 / 1.50
					760.5					
20	760	18.50 - 23.50 SM, siltly SAND, fine, non to low plasticity, trace organics (tree root); dark gray to black; cohesive, dry to moist, w<PL, firm	SM		18.50	2	DO	5-8-13	21	1.50 / 1.50
					755.5					
25	755	23.50 - 38.50 ML, SILT, trace fine to coarse sand, non to low plasticity; red-brown to gray to black; cohesive, dry to moist, w<PL, firm.	ML		23.50	3	DO	6-8-13	21	1.16 / 1.50
30	750					4	DO	3-2-5	7	1.16 / 1.50
35	745					5	DO	3-3-5	8	1.00 / 1.50
					740.5					
40	740	38.50 - 52.40 SM, silty SAND, fine to coarse, non to low plasticity; dark brown to gray to black, deeply weathered, schistose gneiss / schist saprolite; non-cohesive to cohesive, moist, w<PL, compact to dense / firm to stiff, PWR.	SM		38.50	6	DO	7-10-23	33	1.33 / 1.50
45	735					7	DO	6-19-50/3	69/9	1.25 / 0.75

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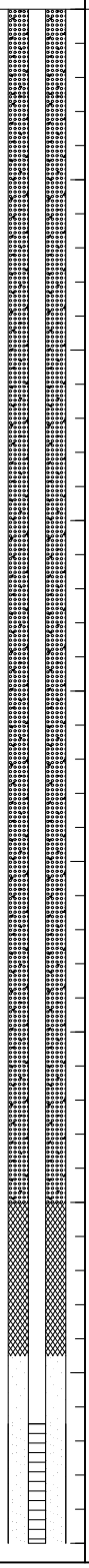
MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-41.5'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 41.5'-51.5'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 39.5'-51.9'
Type: FilterSil

FILTER PACK SEAL
Interval: 35'-39.5'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-35'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 4"x4"x5' aluminum

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: Michael Boatman, PG
CHECKED BY: Timothy Richards, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-61

SHEET 2 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 52.40 ft
LOCATION: SSW of B-57. on the NE corner of the switch yard

DRILL RIG: CME 55
DATE STARTED: 9/28/16
DATE COMPLETED: 9/29/16

NORTHING: 1,390,957.80
EASTING: 2,202,505.80
GS ELEVATION: 779.0
TOC ELEVATION: 782.09 ft

DEPTH W.L.: 22.25
ELEVATION W.L.: 756.75
DATE W.L.: 10/6/2016
TIME W.L.: 950

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
45		38.50 - 52.40 SM, silty SAND, fine to coarse, non to low plasticity; dark brown to gray to black, deeply weathered, schistose gneiss / schist saprolite; non-cohesive to cohesive, moist, w<PL, compact to dense / firm to stiff, PWR. *(Continued)*	SM								0.010 Slotted Screen	**WELL CASING** Interval: 0'-41.5' Material: Schedule 40 PVC Diameter: 2 Joint Type: Flush/Screw
	730					8	DO	14-9-14	23	1.50 / 1.50		**WELL SCREEN** Interval: 41.5'-51.5' Material: Schedule 40 PVC Diameter: 2 Slot Size: 0.010 End Cap: Schedule 40 PVC
50					726.6							**FILTER PACK** Interval: 39.5'-51.9' Type: FilterSil
		Boring completed at 52.40 ft										**FILTER PACK SEAL** Interval: 35'-39.5' Type: PEL-PLUG 3/8" Bentonite pellets
	725											**ANNULUS SEAL** Interval: 0'-35' Type: CETCO puregold grout (70:30)
55												**WELL COMPLETION** Pad: 2' x 2' concrete Protective Casing: 4"x4"x5' aluminum
	720											**DRILLING METHODS** Soil Drill: Hollow-stem auger Rock Drill: N/A
60												
	715											
65												
	710											
70												
	705											
75												
	700											
80												
	695											
85												
	690											
90												

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: Michael Boatman, PG
CHECKED BY: Timothy Richards, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-62

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 39.90 ft
LOCATION: South of the Main road.

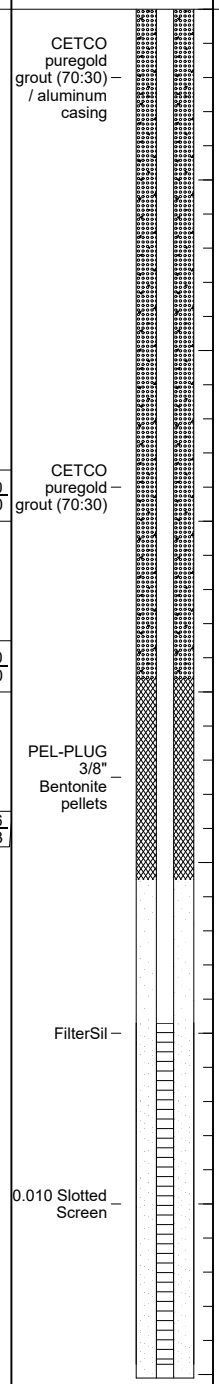
DRILL RIG: CME 55
DATE STARTED: 10/4/16
DATE COMPLETED: 10/4/16

NORTHING: 1,389,828.10
EASTING: 2,201,811.20
GS ELEVATION: 760.4
TOC ELEVATION: 760.08 ft

DEPTH W.L.: 21.57
ELEVATION W.L.: 738.83
DATE W.L.: 10/6/2016
TIME W.L.: 1000

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	760	0.00 - 13.50 Top 10' were Hydrovac for utilities.								
					746.9					
		13.50 - 18.50 SM, silty SAND, fine, low to moderate plasticity; red-brown; cohesive, wet, w~PL, very soft to soft.	SM		13.50 741.9	1	DO	3-1-3	4	1.00 1.50
		18.50 - 23.50 CL, CLAY, trace silt and fine sand, moderate plasticity; red-brown; cohesive, moist to wet, w~PL, soft to firm.	CL		18.50 736.9	2	DO	1-1-1	2	1.50 1.50
		23.50 - 24.60 SP, poorly-graded SAND, fine to coarse, non plastic; gray to black; non-cohesive, wet, w<PL, very dense, PWR. Auger Refusal at 24.2	SP		23.50 735.8	3	DO	50/4	50/4	0.16 0.33
		24.60 - 39.90 Bedrock; SCHIST fresh to slightly weathered, foliated, dark green to black, fine to medium grained.	BR		24.60 720.5					
40	720	Boring completed at 39.90 ft								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-30'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 29.7'-39.7'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 25.5'-40.1'
Type: FilterSil

FILTER PACK SEAL
Interval: 19.6'-25.5'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-19.6'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: HQ Core Barrell

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: Michael Boatman, PG
CHECKED BY: Timothy Richards, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-63

SHEET 1 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 46.00 ft
LOCATION: Due south of B-61. Flush mounted in the roadway.

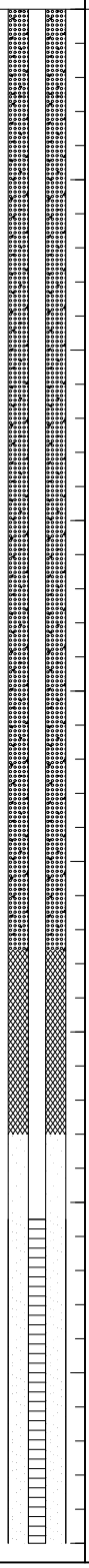
DRILL RIG: CME 55
DATE STARTED: 10/6/16
DATE COMPLETED: 10/6/16

NORTHING: 1,390,999.10
EASTING: 2,202,978.10
GS ELEVATION: 777.3
TOC ELEVATION: 777.10 ft

DEPTH W.L.: 34.2
ELEVATION W.L.: 743.1
DATE W.L.: 10/6/2016
TIME W.L.: 1745

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	775	0.00 - 13.50 Top 12' were Hydrovac for utilities.								
					763.8					
		13.50 - 18.50 CL-CH, CLAY, trace to some fine to coarse sand, moderate plasticity; reddish brown, fill; cohesive, moist, w<PL, firm	CL-CH		13.50	1	DO	3-2-2	4	0.75 1.50
10	765				758.8					
		18.50 - 24.50 ML, SILT, trace clay and sand, low plasticity; reddish brown; cohesive, moist, w<PL, firm.	ML		18.50	2	DO	1-1-2	3	1.50 1.50
20	755				752.8	3	DO	8-20-10	30	1.50 1.50
		24.50 - 25.00 SM, silty SAND, fine to coarse, non-plastic, trace silt; dark gray to black; non-cohesive, moist, w<PL, loose.	SM		752.3 25.00					
25	750	25.00 - 38.50 No samples were collected, due to the hole traveling on the driller.				4	DO	0-0-0	0	0.00 1.50
30	745					5	DO	0-0-0	0	0.00 1.50
35	740				738.8					
		38.50 - 46.00 SM, silty SAND, fine to coarse, non-plastic, trace gravel; dark gray; non-cohesive, wet, w<PL, very loose, PWR.	SM		38.50	6	DO	8-9-16	25	0.66 1.50
40	735					7	DO	50/1	50/1	0.08 0.08
45		Log continued on next page								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 35.5'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 35.5'-45.5'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 33'- 45.9'
Type: FilterSil

FILTER PACK SEAL
Interval: 27.6'-33'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0' - 27.6'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Flush Mount

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: Michael Boatman, PG
CHECKED BY: Timothy Richards, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-63

SHEET 2 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 46.00 ft
LOCATION: Due south of B-61. Flush mounted in the roadway.

DRILL RIG: CME 55
DATE STARTED: 10/6/16
DATE COMPLETED: 10/6/16

NORTHING: 1,390,999.10
EASTING: 2,202,978.10
GS ELEVATION: 777.3
TOC ELEVATION: 777.10 ft

DEPTH W.L.: 34.2
ELEVATION W.L.: 743.1
DATE W.L.: 10/6/2016
TIME W.L.: 1745

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
45			SM		731.3							
		Boring completed at 46.00 ft										
	730											
50												
	725											
55												
	720											
60												
	715											
65												
	710											
70												
	705											
75												
	700											
80												
	695											
85												
	690											
90												

WELL CASING
Interval: 0' - 35.5'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Flush/Screw

WELL SCREEN
Interval: 35.5'-45.5'
Material: Schedule 40 PVC
Diameter: 2
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 33'- 45.9'
Type: FilterSil

FILTER PACK SEAL
Interval: 27.6'-33'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0' - 27.6'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Flush Mount

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: Michael Boatman, PG
CHECKED BY: Timothy Richards, PG
DATE: 12/22/17

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

SOUTHERN COMPANY
Energy to Serve Your World™

DRILLING LOG
GEOLOGICAL SERVICES

Hole No. **B-64**
Sheet 1 of 2

SITE	**Plant McDonough**	HOLE DEPTH	**31'**	SURFELEV	786.10
LOCATION	North of AP-4, near property line at Atkinson Rd	COORDINATES	33.832856		-84.474746
ANGLE		BEARING		CONTRACTOR	SCS
DRILL NO.		DRILLING METHOD	HSA	NO. SAMPLES	
NO. U.D. SAMPLES	0	CASING SIZE	2"	LENGTH	10'
CORE SIZE		TOTAL % REC.		WATER TABLE DEPTH	4.9' BLS
ELEV.	781.20' NAVD88	TIME AFTER COMP.	24 hr	DATE TAKEN	11/3/2016
TYPE GROUT	Bentonite	QUANTITY		MIX	.
DRILLING START DATE	11/2/2016	DRILLER	Milam	RECORDER	Abraham
APPROVED		DRILLING COMP. DATE	11/2/2016		

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	786.10								
1	785.10								
2	784.10								
3	783.10								
4	782.10								
5	781.10	**HYDRO-EXCAVATION** Hydrovac from land surface to 20-feet below land. No samples							
6	780.10								
7	779.10								
8	778.10								
9	777.10								
10	776.10								
11	775.10								
12	774.10								
13	773.10								
14	772.10								
15	771.10								
16	770.10								
17	769.10								
18	768.10								
19	767.10								
20	766.10								
21	765.10								
22	764.10	**SANDY SILT SAPROLITE**							
23	763.10	Light gray sandy silt saprolite; minor quartz & feldspar grains, micaceous; oxidation along relict foliations; Fe stains; 2.5Y/6/1; SM.	S-1	23.5 - 25	1-1-2			85	
24	762.10								

Form GS9901 7-26-2004

Location resurveyed June - July 2020

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. **B-64**
Sheet 2 of 2

SITE **Plant McDonough** TOTAL DEPTH **31'** SURF.ELEV. 786.10

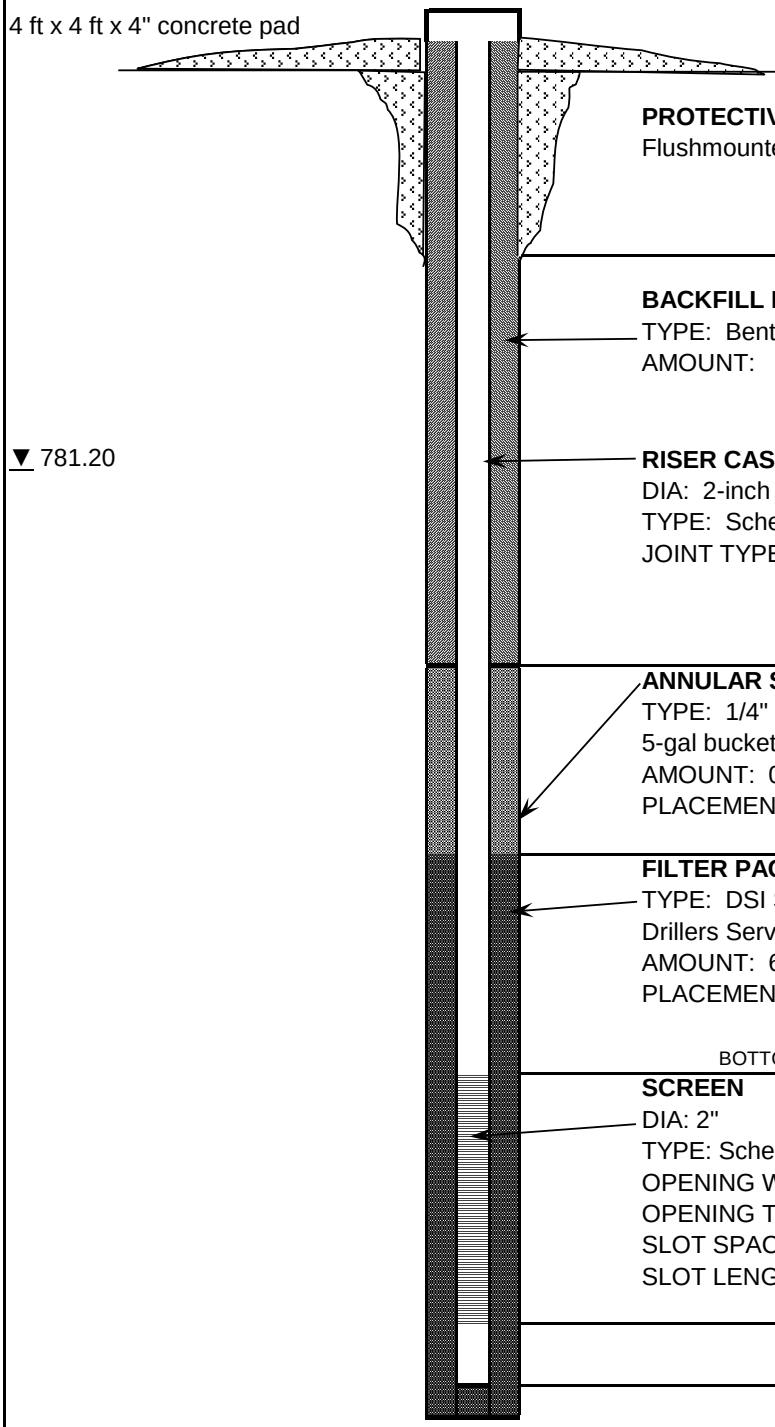
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	761.10								
26	760.10	**SANDY SILT SAPROLITE**							
27	759.10								
28	758.10	Light brown sandy silt saprolite; micaceous; highly weathered biotite gneiss; quartz,	S-2	28.5 - 30	1-2-2			90	
29	757.10	feldspar, biotite, FeO; 2.5Y/8/1; SM.							
30	756.10								
31	755.10	END OF BORING AT 30.4-FT REGOLITH WELL							
53	733.10								
54	732.10								
55	731.10								
56	730.10								

Form GS9901 7-26-2004

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS, Inc.	WELL NAME
North of AP-4, at Atkinson Rd	DRILLER: Milam	
LOCATION: 33.832856 / -84.474746	RIG TYPE: CME550	**B-64**
LOGGER: Abraham	DRILLING METHODS: HSA	
DATE CONSTRUCTED: 11/2/2016		



	DEPTH FEET	ELEVATION FT, MSL
GROUND SURFACE	0.0	786.10
PROTECTIVE CASING Flushmounted		
BOTTOM OF GROUT	3.0	783.10
BACKFILL MATERIAL TYPE: Bentonite Grout mix AMOUNT: 1 x 50lbs		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	8.10	778.00
ANNULAR SEAL TYPE: 1/4" coated bentonite pellets 5-gal buckets AMOUNT: 0.5 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	16.50	769.60
FILTER PACK TYPE: DSI Sand - 1A (20/40) Drillers Services, Inc. AMOUNT: 6 Bags PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	20.00	766.10
SCREEN DIA: 2" TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.25 inch SLOT LENGTH: 1.5 inch		
BOTTOM OF SCREEN	30.00	756.10
BOTTOM OF WELL	30.40	755.70

HOLE DIA: 9 inch

Location resurveyed June - July 2020

SOUTHERN COMPANY
Energy to Serve Your World™

DRILLING LOG
GEOLOGICAL SERVICES

Hole No. **B-65**
Sheet 1 of 2

SITE **Plant McDonough** HOLE DEPTH **50'** SURFELEV 822.30

LOCATION North of AP-4, near property line, NW end of parking lot COORDINATES 33.832862 -84.471389

ANGLE _____ BEARING _____ CONTRACTOR SCS DRILL NO. _____

DRILLING METHOD HSA NO. SAMPLES _____ NO. U.D. SAMPLES 0

CASING SIZE 2" LENGTH 10' CORE SIZE _____ TOTAL % REC. _____

WATER TABLE DEPTH 10.5' BLS ELEV. 811.80 NAVD88 TIME AFTER COMP. 24 HR DATE TAKEN 11/16/2016

TYPE GROUT _____ QUANTITY _____ MIX · DRILLING START DATE 11/15/2016

DRILLER Milam RECORDER Abraham APPROVED _____ DRILLING COMP. DATE 11/15/2016

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	822.30								
1	821.30								
2	820.30								
3	819.30								
4	818.30								
5	817.30	**HYDRO-EXCAVATION** Hydrovac from land surface to 10-feet below land. No samples							
6	816.30								
7	815.30								
8	814.30								
9	813.30								
10	812.30								
11	811.30								
12	810.30								
13	809.30								
14	808.30	**SILTY SAND SAPROLITE** Light brown silty sand with minor clay; weathered schist fragments; minor oxidation bands; minor quartz fragments 10YR/3/2; SM; At 15-ft, large rock fragments brownish black color; damp.	S-1	13.5-15	13-50/3			90	
15	807.30								
16	806.30								
17	805.30								
18	804.30								
19	803.30	**SILTY SAND SAPROLITE** Blackish brown silty sand saprolite; large micas with a greenish tinge; highly oxidized with FeO parallel to foliations; 10YR/3/2; SM; damp to moist.	S-2	18.5-20	24-30-31	61		90	
20	802.30								
21	801.30								
22	800.30	**CLAYEY SILT** Dark gray to reddish brown silty sand saprolite; micas abundant; softer than interval above; few gravel-size rock fragments; FeO bands with minor MnO streaks; 2.5Y/3/2; SM; moist to saturated.	S-3	23.5 - 25	2-16-50/2			90	
23	799.30								
24	798.30								

Form GS9901 7-26-2004

Location resurveyed June - July 2020

SOUTHERN COMPANY
Energy to Serve Your World™

DRILLING LOG
GEOLOGICAL SERVICES

Hole No. **B-65**
Sheet 2 of 2

SITE **Plant McDonough** TOTAL DEPTH **50'** SURF.ELEV. 822.30

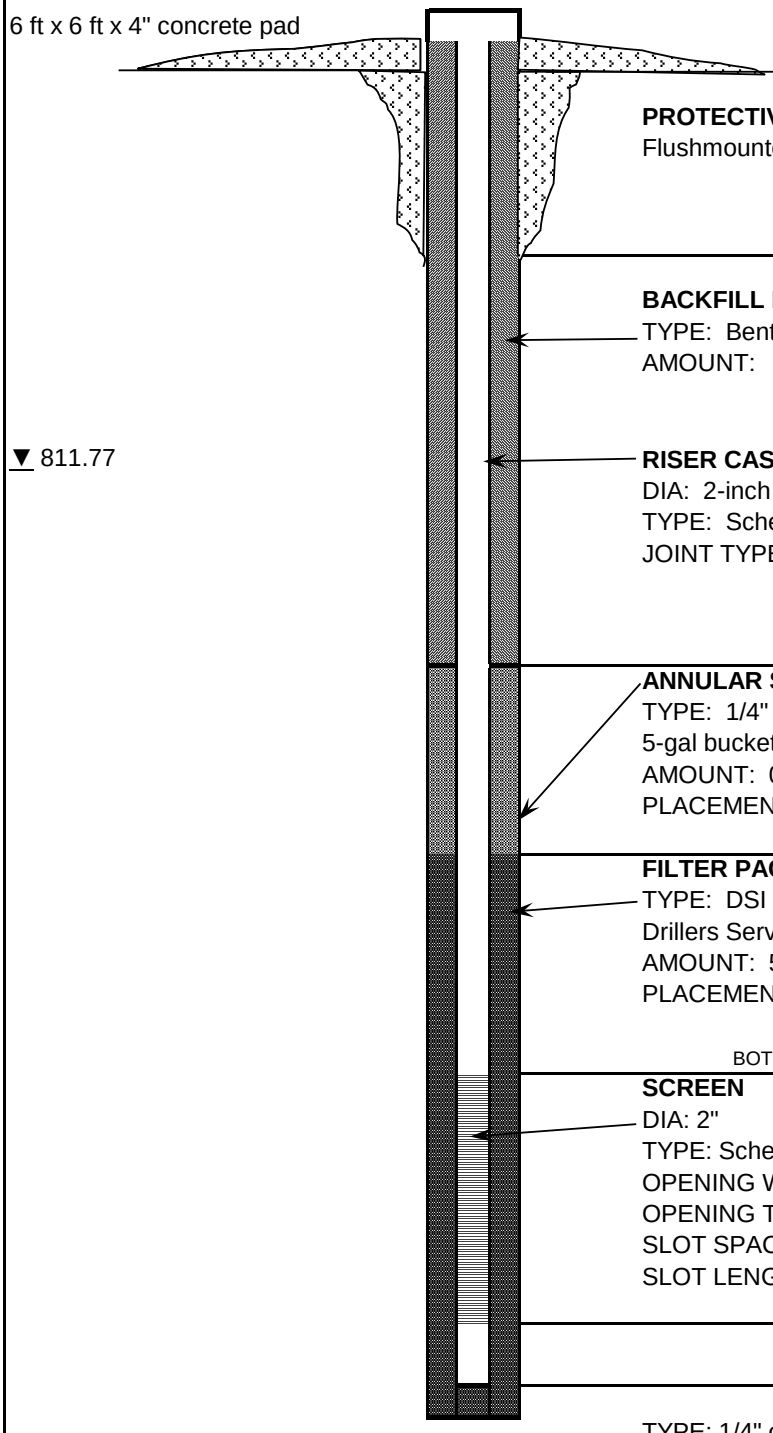
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	797.30								
26	796.30	**SILTY SAND SAPROLITE**							
27	795.30								
28	794.30	Dark gray to reddish brown silty sand with minor clay; few structures; 2.5Y/3/2; SM;	S-4	28.5-30	50/2			90	
29	793.30	saturated.							
30	792.30								
31	791.30								
32	790.30	**SILTY SAND SAPROLITE**							
33	789.30	Dark gray to reddish brown silty sand with minor gravel; damp to saturated; 2.5Y/3/2	S-5	33.5 - 35	50/2			90	
34	788.30								
35	787.30								
36	786.30								
37	785.30	**SILTY SAND SAPROLITE**							
38	784.30	Dark gray to reddish brown silty sand with minor clay; saprolite; saturated; 2.5YR/3/2	S-6	38.5 - 40	6-9-32			90	
39	783.30								
40	782.30		S-7	40 - 42	50/2			90	
41	781.30								
42	780.30	Top of Rock - 42-ft							
43	779.30	MUSCOVITE-BIOTITE SCHIST; minor chlorite;						95	
44	778.30	2 horizontal fractures, non-water bearing, 44' 1 sub-vertical fracture, water-bearing, 46' - 50'		42 - 49.9					
45	777.30	BACKFILLED & SET REGOLITH WELL							
46	776.30								
47	775.30								
48	774.30								
49	773.30								
50	772.30	END OF BORING - 49.9-FT							
51	771.30								
52	770.30								
53	769.30								
54	768.30								
55	767.30								
56	766.30								

Form GS9901 7-26-2004

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS, Inc.	WELL NAME
NE of AP-4 at Argos, near N corner parking lot	DRILLER: Milam	
LOCATION: 33.832862 / -84.471389	RIG TYPE: CME550	**B-65**
LOGGER: Abraham	DRILLING METHODS: HSA	
DATE CONSTRUCTED: 11/15/2016		



	DEPTH FEET	ELEVATION FT, MSL
GROUND SURFACE	0.00	822.30
PROTECTIVE CASING Flushmounted		
BOTTOM OF GROUT	3.00	819.30
BACKFILL MATERIAL TYPE: Bentonite Grout mix AMOUNT: 3 x 50lbs (1.5 bag bentonite; 1.5 bag grout)		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	26.80	795.50
ANNULAR SEAL TYPE: 1/4" coated bentonite pellets 5-gal buckets AMOUNT: 0.5 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	31.80	790.50
FILTER PACK TYPE: DSI Sand - 1A (20/40) Drillers Services, Inc. AMOUNT: 5 Bags PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	34.40	787.90
SCREEN DIA: 2" TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01 inch OPENING TYPE: Slotted SLOT SPACING: 0.25 inch SLOT LENGTH: 1.5 inch		
BOTTOM OF SCREEN	44.40	777.90
BOTTOM OF WELL	45.40	776.90
TYPE: 1/4" coated bentonite pellets between 45.4' and 49.9'		
	49.90	772.40

Location resurveyed June - July 2020

SOUTHERN COMPANY
Energy to Serve Your World™

DRILLING LOG
GEOLOGICAL SERVICES

Hole No. **B-66**
Sheet 1 of 2

SITE **Plant McDonough** HOLE DEPTH **55.5'** SURFELEV 813.30

LOCATION North of AP-4, near propertly line concrete pile COORDINATES 33.831427 -84.470638

ANGLE _____ BEARING _____ CONTRACTOR SCS DRILL NO. _____

DRILLING METHOD HSA NO. SAMPLES _____ NO. U.D. SAMPLES 0

CASING SIZE 2" LENGTH 10' CORE SIZE _____ TOTAL % REC. _____

WATER TABLE DEPTH 14.8' BLS ELEV. 798.50' NAVD88 TIME AFTER COMP. _____ DATE TAKEN _____

TYPE GROUT _____ QUANTITY _____ MIX . DRILLING START DATE 11/16/2016

DRILLER Milam RECORDER Abraham APPROVED _____ DRILLING COMP. DATE 11/16/2016

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	813.30								
1	812.30								
2	811.30								
3	810.30								
4	809.30								
5	808.30	**HYDRO-EXCAVATION** Hydrovac from land surface to 10-feet below land. No samples							
6	807.30								
7	806.30								
8	805.30								
9	804.30								
10	803.30								
11	802.30								
12	801.30								
13	800.30								
14	799.30	**CLAYEY SILT** Light Brown to reddish brown clayey silt; 10R/5/6; damp; FeO along fracture traces & relict foliations; organics absent.	S-1	13.5-15	2-1-1	2		85	
15	798.30								
16	797.30								
17	796.30								
18	795.30								
19	794.30	**CLAYEY SILT** Light Brown to reddish brown clayey silt; 10R/5/6; damp; FeO along fracture traces & relict foliations;	S-2	18.5-20	2-1-5	6		90	
20	793.30								
21	792.30								
22	791.30	**CLAYEY SILT** Brownish gray with reddish streaks clayey silt grading to brownsh gray saprolite; 10YR/6/3; moist; FeO bands with minor MnO streaks along fracutre traces; distinct MnO layer at 25-ft parallel to foliation; fractures increase at 25-ft.	S-3	3-4-9	3-4-9	14		90	
23	790.30								
24	789.30								

Form GS9901 7-26-2004

Location resurveyed June - July 2020

SOUTHERN COMPANY
Energy to Serve Your World™

DRILLING LOG
GEOLOGICAL SERVICES

Hole No. **B-66**
Sheet 2 of 2

SITE **Plant McDonough** TOTAL DEPTH **55.5'** SURF.ELEV. 813.30

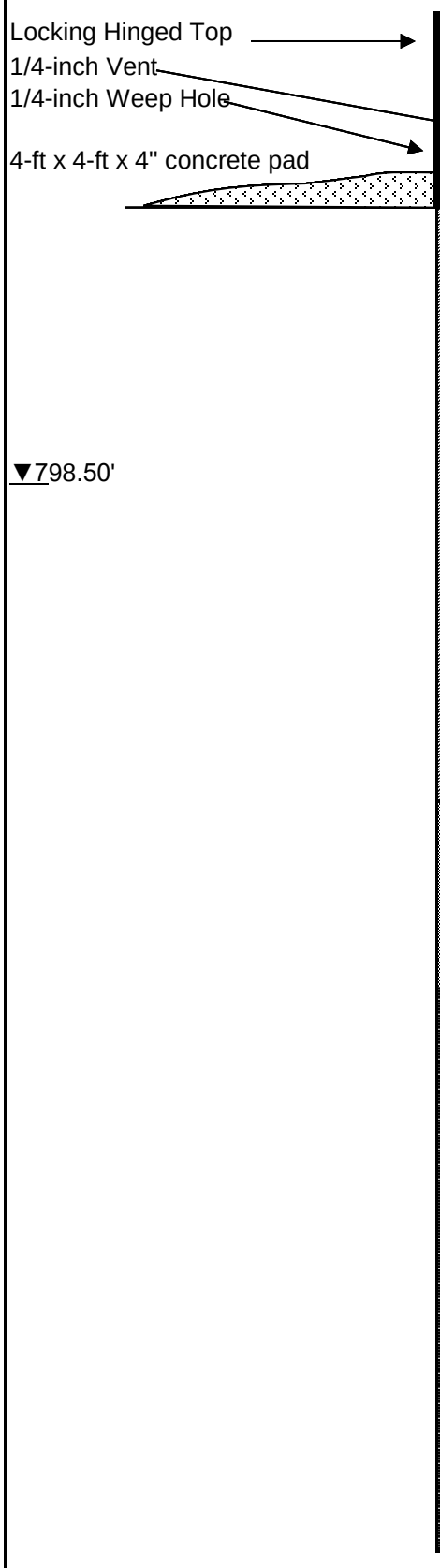
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	788.30								
26	787.30	**SILTY SAND**							
27	786.30								
28	785.30	Medium to dark gray silty sand with minor clay; 2.5Y/5/2; few brownish-black weathered	S-4	4-5-10	15	80			
29	784.30	minerals; micaceous texture;							
30	783.30	MnO bands along fracture & foliations; saprolite between 28 and 30 feet.							
31	782.30								
32	781.30	**SILTY SAND SAPROLITE**							
33	780.30	Light to dark gray SILTY SAND; 5Y/5/3;	S-5	7-9-16	25	90			
34	779.30	moist to wet saprolite; gravel-size rock frags; weathered feldspars & quartz; increasing							
35	778.30	biotite & MnO at 35-feet.							
36	777.30								
37	776.30								
38	775.30	Grayish brown - brownish-black SILTY SAND	S-6	6-8-10	18	90			
39	774.30	with minor clay; 5Y/3/2; fewer rock fragments than above; moist to wet.							
40	773.30								
41	772.30								
42	771.30								
43	770.30	**SILTY SAPROLITE** Yellowish brown silt with minor clay saprolite;	S-7	5-6-9	16	90			
44	769.30	2.5Y/6/3; lighter than above; abundant MnO streaks; wet but not saturated.							
45	768.30								
46	767.30								
47	766.30	**SILTY SAND SAPROLITE**							
48	765.30	Yellowish to blackish brown SILTY SAND saprolite; 2.5Y/6/3; minor rock fragments;	S-8	6-7-17	24	90			
49	764.30	saturated							
50	763.30								
51	762.30								
52	761.30								
53	760.30	**SILTY SAND SAPROLITE**							
54	759.30	Yellowish brown silty sand saprolite; minor clay; 2.5/Y/6/3; abundant MnO streaks	S-9	7-8-18	26	90			
55	758.30	parallel to relict foliations; saturated.							
56	757.30	END OF BORING; REGOLITH WELL							

Form GS9901 7-26-2004

Location resurveyed June - July 2020

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant McDonough	DRILLING CO.: SCS, Inc.	WELL NAME
NE of AP-4 at Argos, nr concrete pile, ~250' NE of DGWC-10	DRILLER: Wideman	
LOCATION:33.831427 / -84.470638	RIG TYPE: CME 550	
LOGGER: Abraham	DRILLING METHODS: HSA	**B-66**
DATE CONSTRUCTED: 3/7/2016		



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-1.89	815.19
GROUND SURFACE	0.00	813.30
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Grout-bentonite mix AMOUNT: 4 x 50 lbs **RISER CASING** DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	37.60	775.70
ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 0.5 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	41.70	771.60
FILTER PACK TYPE: DSI Sand - 1A (20/40) Drillers Services, Inc. AMOUNT: 5 bags PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	45.00	768.3
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	55.00	758.30
BOTTOM OF WELL	55.30	758.00

HOLE DIA: 9"

Location resurveyed June - July 2020

RECORD OF BOREHOLE DGWC-68/B-68

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 40.40 ft
LOCATION: West Toe of AP-1

DRILL RIG: Geoprobe
DATE STARTED: 3/16/17
DATE COMPLETED: 3/16/17

NORTHING: 1,391,298.20
EASTING: 2,200,714.20
GS ELEVATION: 759.0
TOC ELEVATION: 758.68 ft

DEPTH W.L.: 3.5
ELEVATION W.L.: 755.06
DATE W.L.: 3/16/17
TIME W.L.: 1700

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0		0.00 - 10.00 Hydrovac							
	755								
5									
	750			749					
10		10.00 - 15.00 Sandy Silt, fine to medium sand, dark brown, highly weathered, micaceous, cohesive, moist, firm, sample spoon wet	ML	10.00					
	745				S1	SPT	5-6-5	11	1.08 1.50
15		15.00 - 18.80 Silty Sand, fine to coarse, trace gravel, greenish grey, weathered, thinly bedded, noncohesive, very dense, (weathered gneiss)	PWR	744 15.00					
	740		PWR	740.2	S2	SPT	50/3	50/3	0.25 0.25
20		19.20 - 22.80 Slightly weathered to fresh, weakly foliated, light gray to white, fine to very fine grained, medium strong to strong, MYLONITE (White Mylonite).	BR	19.20					
	735	22.80 - 24.10 Slight to moderately weathered, weakly foliated, dary gray to black , fine to very fine grained, medium strong, MYLONITE (Black Mylonite).	BR	736.2 22.80 734.9					
25		24.10 - 28.90 Slightly weathered to fresh, weakly foliated, interlayered with vein quartz (~1"), light grey to white, fine to very fine grained, medium strong to strong, MYLONITE (White Mylonite).	BR	24.10					
	730			730.1					
30		28.90 - 38.00 Slightly weathered to fresh, moderate to strongly foliated, interlayered with Black Mylonite (~1") and pegmatites (~1 to 2"), light to dark gray, fine to coarse grained, medium strong to strong, Sheared Gneiss (Long Island Creek).	BR	28.90					
	725								
35									
	720	38.00 - 39.20 Slight to moderately weathered, weakly foliated, dary gray to black , fine to very fine grained, medium strong, MYLONITE (Black Mylonite).	BR BR	721 38.00 719.8 39.20					
40		39.20 - 40.40 Slightly weathered to fresh, moderate to strongly foliated, light to dark gray, fine to coarse grained, medium strong to strong, Sheared Gneiss (Long Island Creek). Boring completed at 40.40 ft		718.6					
	715								
45									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES

Flush Mounted Casing
CETCO puregold grout (70:30)
PEL-PLUG 3/8" Bentonite pellets
FilterSil
.010" Slotted Schedule 40 PVC
FilterSil
PEL-PLUG 3/8" Bentonite pellets

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-8'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screen

WELL SCREEN
Interval: 8.0'-18.0'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: .010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 6.1'-18.4'
Type: FilterSil

FILTER PACK SEAL
Interval: 4.1'-6.1'
Type: PEL-PLUG 3/8" Bentonite pellets

ANNULUS SEAL
Interval: 0'-4.1'
Type: CETCO puregold grout (70:30)

WELL COMPLETION
Pad: 4'x4' Concrete
Protective Casing: 8" Round Flush Mount

DRILLING METHODS
Soil Drill: Hollow-stem auger
Rock Drill: HQ Core Barrell

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: Sean Denty

GA INSPECTOR: Ben Hodges
CHECKED BY: Timothy Richards, PG
DATE: 1/16/18

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-77

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 42.00 ft
LOCATION: South by river, SW of B-63

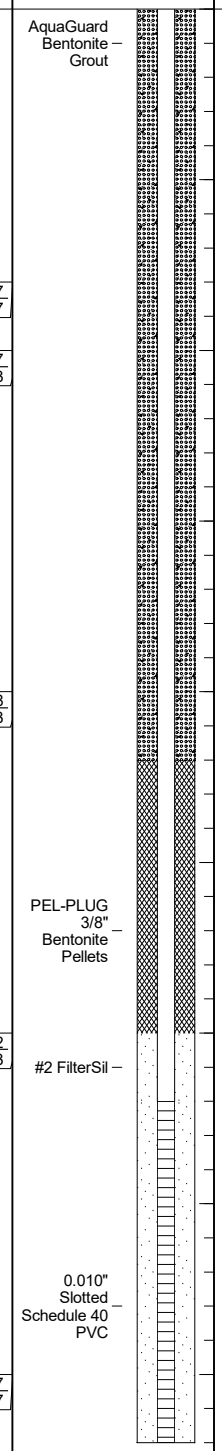
DRILL RIG: Rotosonic 1159
DATE STARTED: 9/17/19
DATE COMPLETED: 9/17/19

NORTHING: 1,390,948.70
EASTING: 2,202,942.00
GS ELEVATION: 777.1
TOC ELEVATION: 776.86 ft

DEPTH W.L.: 28.50
ELEVATION W.L.: 748.6
DATE W.L.: 1/13/2020
TIME W.L.: 14:39

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
0	777	0.00 - 8.00 Hydrovac, no soil recovery due to Hydrovac						
					769.1			
		8.00 - 10.00 Fill			8.00	S1	ROTO SONIC	0.17 0.17
					767.1			
10	767	10.00 - 20.00 Sandy SILT, trace clay, some gravel, reddish brown, low plasticity, w<PL, moist, firm, cohesive	MLS		10.00	S2	ROTO SONIC	0.67 0.83
					757.1			
20	757	20.00 - 30.00 Sandy SILT, micaceous, trace clay, some gravel, reddish brown, low plasticity, w<PL, moist, firm, cohesive	MLS		20.00	S3	ROTO SONIC	0.38 0.83
					747.1			
30	747	30.00 - 40.00 Silty CLAY, some sand, transitioning from reddish-brown to brownish gray, w~PL, moderate plasticity, moist to wet, soft to firm, cohesive,	CL-ML		30.00	S4	ROTO SONIC	0.52 0.83
					737.1			
40	737	40.00 - 42.00 Silty CLAY, some sand, transitioning from reddish-brown to brownish gray, w~PL, moderate plasticity, soft to firm, moist to wet,transition to PWR, cohesive	CL-ML		40.00	S5	ROTO SONIC	0.17 0.17
					735.1			
45	735	Boring completed at 42.00 ft						

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-32'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 32-42'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 30'-42'
Type: Filter Media

FILTER PACK SEAL
Interval: 22'-30'
Type: PEL-PLUG 3/8"

ANNULUS SEAL
Interval: 0'-22'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 4'x4' Concrete
Protective Casing: 4" Stainless Steel

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Jose

GA INSPECTOR: D. Thomas
CHECKED BY: Timothy Richards, PG
DATE: 2/11/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 9/2/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-78

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 30.00 ft
LOCATION: South of road on north side of plant property

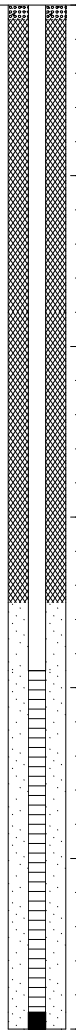
DRILL RIG: Rotosonic 1159
DATE STARTED: 9/22/19
DATE COMPLETED: 9/22/19

NORTHING: 1,394,328.20
EASTING: 2,202,958.20
GS ELEVATION: 788.0
TOC ELEVATION: 790.75 ft

DEPTH W.L.: 9.05
ELEVATION W.L.: 778.95
DATE W.L.: 1/13/2020
TIME W.L.: 13:44

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
0		0.00 - 8.70 Hydrovac			0		0.00 0.73
	785						
5							
	780			779.3		ROTO SONIC	
		8.70 - 11.20 (MLS) sandy SILT, low plasticity fines, fine to medium sub-angular sand, trace organics (roots); light brown (5YR 5/6) to Pale Brown (5YR 2/2), residual soil with frequent micaceous minerals present; cohesive, w~PL, soft	MLS	8.70 776.8	1	ROTO SONIC	0.94 0.94
10		11.20 - 17.00 (MLS) sandy SILT, non to low plasticity fines, fine sub-angular sand, trace soft (crumbles with pressure from fingers) gravels with relic foliations; pale yellowish brown (10YR 6/2) with light gray (N7) and dark yellowish brown (10YR 4/2) foliations, highl	MLS	11.20			
	775			771			
15		17.00 - 25.10 (SM) SILTY SAND, fine sub-angular to sub-rounded sand, non-plastic fines, trace fine angular soft (crumbles with pressure from fingers) with relic foliations; pale yellowish brown (10YR 6/2) with very pale orange (10YR 8/2) and dark yellowish brown (10YR	SM	17.00	2	ROTO SONIC	0.18 0.42
	770						
20							
	765			762.9		ROTO SONIC	
25		25.10 - 30.00 BEDROCK, GNIESS, slightly to moderately weathered (W2 - W3), medium dark gray (N4), with light bluish gray (5B 5/1) and light gray (N7) foliations, fine to medium grained, medium strong rock (R3)	GNIESS	25.10	3		0.31 0.42
	760						
30				758			
		Boring completed at 30.00 ft					
	755						
35							
	750						
40							
	745						
45							

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0.0 - 20.0 '
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 20.0-29.5 '
Material: Schedule 40 PVC
Schedule 40 PVC
Diameter: 2" ID 4 " OD
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 17.5 - 30.0
Type: 20/40 FilterSil

FILTER PACK SEAL
Interval: 9.0 - 17.5'
Type: Pel-Plug 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0.4 - 9.0 '
Type: Baroid 3/8" Bentonite Chips (Holeplug)

WELL COMPLETION
Pad: 4' x 4' x 4"
Protective Casing: 4" Stainless Steel

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic

~250 gallons of water used while drilling

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Jose

GA INSPECTOR: Jeff Ingram
CHECKED BY: Timothy Richards, PG
DATE: 2/12/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 9/2/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-79

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 35.00 ft
LOCATION: South of road on north side of plant property

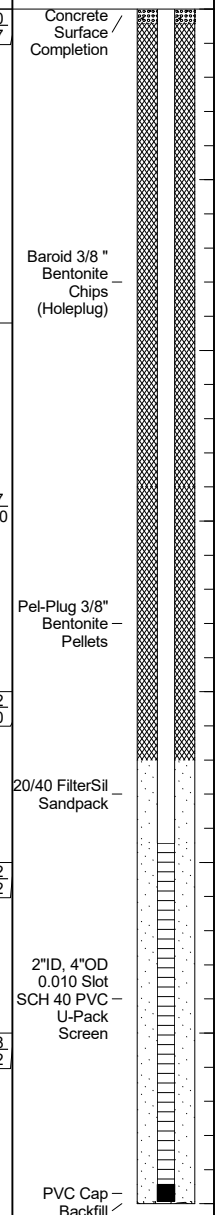
DRILL RIG: Rotosonic 1159
DATE STARTED: 9/20/19
DATE COMPLETED: 9/21/19

NORTHING: 1,394,458.60
EASTING: 2,203,223.00
GS ELEVATION: 785.9
TOC ELEVATION: 788.66 ft

DEPTH W.L.: 5.92
ELEVATION W.L.: 779.98
DATE W.L.: 1/13/2020
TIME W.L.: 14:26

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
0	785	0.00 - 9.20 Hydrovac	NA	776.7	0		0.00 0.77
10	775	9.20 - 13.70 (ML) sandy SILT, non to low plasticity fines, fine sand; layered light brown (5YR 5/6) with dark yellowish brown (10YR 4/2) and pale yellowish brown (10YR 6/2) layers, some relic curved laminated layers (relic foliations); non-cohesive, wet, loose	ML	9.20 772.2			
15	770	13.70 - 30.00 (SM) silty SAND, fine sub-angular sand, non-plastic fines, some soft (crumbles with pressure from fingers) fine to coarse sub-angular gravels; pale yellowish brown (10YR 6/2) with some light brown (5YR 5/6) iron oxide staining, PWR with frequent micaceous mineral; non-cohesive, wet, loose	SM	13.70	1	ROTO SONIC	0.77 10.80
20	765				2	ROTO SONIC	0.42 0.90
25	760				3	ROTO SONIC	0.42 0.42
30	755	30.00 - 35.00 (SM) SILTY SAND, fine sub-angular sand, non-plastic fines, trace soft (crumbles with pressure from fingers) fine gravels with some relic foliations; pale yellowish brown (10YR 6/2) to dark yellowish brown (10YR 4/2) layers, PWB; non-cohesive, moist, compact	SM	755.9 30.00	4	ROTO SONIC	0.38 0.42
35	750	Boring completed at 35.00 ft		750.9			
40	745						
45							

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0.0 - 29.43 '
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 24.93-34.43 '
Material: Schedule 40 PVC
Schedule 40 PVC
Diameter: 2" ID 4 " OD
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 22.0 - 35.0'
Type: 20/40 FilterSil

FILTER PACK SEAL
Interval: 14.0 - 22.0'
Type: Pel-Plug 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0.4 - 14.0 '
Type: Baroid 3/8" Bentonite Chips (Holeplug)

WELL COMPLETION
Pad:
Protective Casing: 4" Stainless Steel

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic

~175 gallons of water used while drilling

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Jose

GA INSPECTOR: Jeff Ingram
CHECKED BY: Timothy Richards, PG
DATE: 2/12/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 9/2/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-80

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 30.00 ft
LOCATION: North to northeast of CCR Unit

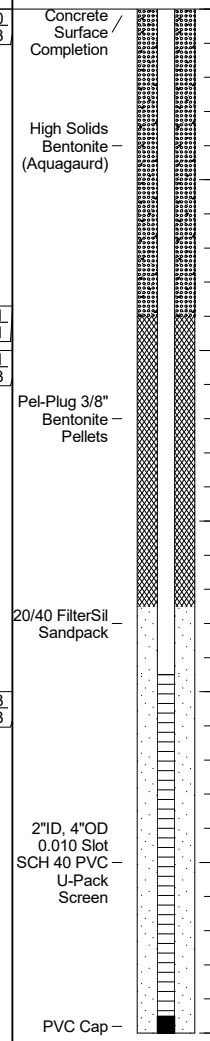
DRILL RIG: Rotosonic 1159
DATE STARTED: 9/20/19
DATE COMPLETED: 9/20/19

NORTHING: 1,394,372.60
EASTING: 2,203,533.90
GS ELEVATION: 801.8
TOC ELEVATION: 804.47 ft

DEPTH W.L.: 16.48
ELEVATION W.L.: 785.32
DATE W.L.: 1/13/2020
TIME W.L.: 14:46

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
0	800	0.00 - 8.70 Hydrovac	NA		793.1	0		0.00 0.73
5	795							
10	790	8.70 - 10.00 (ML) sandy SILT, non-plastic to low plasticity fines, fine to medium sub-rounded sand, trace organics (roots); moderate brown (5YR 4/4) to pale yellowish brown (10YR 6/2); non-cohesive, dry, loose	ML		8.70 791.8	1	ROTO SONIC	0.11 0.11
		10.00 - 13.20 (ML and SP) SILT and SAND, non-plastic to low plasticity fines, fine sub-angular sand; light brown (5YR 5/6) with some moderate reddish brown (10R 4/6) layers, some laminated layers (relic foliations), SAPROLITE; non-cohesive, moist, loose	ML & SP		10.00 788.6	2		0.81 0.83
15	785	13.20 - 25.90 (SM) SILTY SAND, non-plastic to low plasticity fines, fine sub-angular sand; light brown (5YR 5/6) and pale yellowish brown (10YR 6/2) with trace very pale orange (10YR 8/1) grains, SAPROLITE; non-cohesive, wet, loose	SM		13.20			
20	780	20.00: SAA, with frequent weathered micaceous minerals	SM			3	ROTO SONIC	0.83 0.83
25	775	25.90 - 30.00 (SM-SP) SAND, fine to medium sub-rounded sand, some non-plastic fines, trace angular fine to coarse soft (crumbles with pressure from fingers) gravels; very pale orange (10YR 8/2) with pale yellowish brown (10YR 6/2) mottling, PWR; non-cohesive, moist to wet, compact	SP-SM		25.90 775.9 771.8			
30	770	Boring completed at 30.00 ft						
35	765							
40	760							
45								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0.0 - 19.8'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 19.8-29.3'
Material: Schedule 40 PVC
Schedule 40 PVC
Diameter: 2" ID 4 " OD
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 17.5 - 30.0'
Type: 20/40 FilterSil

FILTER PACK SEAL
Interval: 9.0 - 17.5'
Type: Pel-Plug 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0.4 - 9.0'
Type: High Solids Bentonite (Aquagaurd)

WELL COMPLETION
Pad: 4' x 4' x 4"
Protective Casing: 4" Stainless Steel

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic

~150 gallons of water used while drilling

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Jose

GA INSPECTOR: Jeff Ingram
CHECKED BY: Timothy Richards, PG
DATE: 2/12/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 9/2/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-81

SHEET 1 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 50.00 ft
LOCATION: North to northeast of CCR Unit

DRILL RIG: Rotosonic 1159
DATE STARTED: 9/20/19
DATE COMPLETED: 9/22/19

NORTHING: 1,394,364.90
EASTING: 2,203,741.10
GS ELEVATION: 817.7
TOC ELEVATION: 820.56 ft

DEPTH W.L.: 31.39
ELEVATION W.L.: 786.31
DATE W.L.: 1/13/2020
TIME W.L.: 15:06

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES
0		0.00 - 9.00 Hydrovac	NA		808.7	0	ROTO SONIC	0.00 0.75	Concrete Surface Completion
5	815								
10	810	9.00 - 13.10 (SM) SILTY SAND, fine to medium sub-rounded sand, non-plastic fines, trace organics (roots); light brown (5YR 5/6) and moderate reddish brown (10R 4/6), SAPROLITE; non-cohesive, dry, compact	SM		9.00 804.6	1	ROTO SONIC	0.91 0.92	High Solids Bentonite (Aquaguard)
15	805	13.10 - 17.90 (SM) SILTY SAND, fine sub-rounded sand, non-plastic fines; very pale orange (10YR 8/2) to grayish orange (10YR 7/6), PWR with frequent micaceous mineralization; non-cohesive, dry, loose	SM		13.10 799.8				Cave in prior to installing Aquagaurd due to sampling requirements
20	800	17.90 - 19.00 (ML and SP) SILT and SAND, non-plastic fine, fine to medium sub-rounded sand; light brown (5YR 5/6), PWR; non-cohesive, dry, compact.	ML & SP		17.90 798.7 19.00	2	ROTO SONIC	0.83 0.83	
	795	19.00 - 23.50 (SP-SM) SAND, fine to medium sub-rounded sand, some non-plastic fines; grayish orange (10YR 7/4) with light brown (5YR 5/6) and dark yellowish brown (10YR 2/2) grains, PWR; non-cohesive, dry, compact 20.00: SAA with some pale reddish brown (10R 5/6) coloration	SP-SM SP-SM		794.2				
25	790	23.50 - 33.60 (ML) sandy SILT, non-plastic to low plasticity fines, fine sub-angular sand; pale yellowish brown (10YR 6/2) to light brown (5YR 5/6), PWR; non-cohesive, moist, loose	ML		23.50				Pel-Plug 3/8" Bentonite Pellets
30	785	30.00: SAA wit some greenish gray (5G 6/1) layers, trace fine soft angular gravels (crumble with finger pressure).	ML		784.1	3	ROTO SONIC	0.83 0.83	
35	780	33.60 - 40.00 (SM and SP) SILT and SAND, non-plastic to low plasticity fines, fine sub-rounded sand, trace sub-angular soft (crumbles with finger pressure) gravels; yellowish gray (5YR 8/1) to pale pink (5RP 8/2) to greenish gray (5G 6/1), very micaceous, PWR; non-cohesive, moist, loose	ML & SP		33.60 777.7				Backfill 20/40 FilterSil Sandpack
40	775	40.00 - 41.30 (ML and SP) SILT and SAND, non-plastic to low plasticity fines, fine to medium sub-rounded sand; grayish orange (10YR 7/6) to light olive gray (5Y 5/2), highly weathered with some relic foliation layers, PWR; non-cohesive, moist, compact	ML & SP		40.00 776.4 41.30	4	ROTO SONIC	0.83 0.83	
45		41.30 - 45.40 (SP and ML) SAND and SILT, fine sand, non-plastic fines; yellowish gray (5Y 8/1), very micaceous, PWR; non-cohesive, moist, loose	SP & ML						2"ID, 4"OD 0.010 Slot

Log continued on next page

WELL CASING
Interval: 0.0 - 39.17'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 39.17 - 49.17'
Material: 39.17 - 49.17'
Diameter: 2" ID 4 " OD
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 37.0 - 50.0'
Type: 20/40 FilterSil

FILTER PACK SEAL
Interval: 17.0 - 37.0'
Type: Pel-Plug 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0.4 - 17.0'
Type: High Solids Bentonite (Aquagaurd)

WELL COMPLETION
Pad: 4' x 4' x 4"
Protective Casing: 4" Stainless Steel

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic

~150 gallons of water used while drilling

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Jose

GA INSPECTOR: Jeff Ingram
CHECKED BY: Timothy Richards, PG
DATE: 2/12/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 9/2/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-81

SHEET 2 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 50.00 ft
LOCATION: North to northeast of CCR Unit

DRILL RIG: Rotosonic 1159
DATE STARTED: 9/20/19
DATE COMPLETED: 9/22/19

NORTHING: 1,394,364.90
EASTING: 2,203,741.10
GS ELEVATION: 817.7
TOC ELEVATION: 820.56 ft

DEPTH W.L.: 31.39
ELEVATION W.L.: 786.31
DATE W.L.: 1/13/2020
TIME W.L.: 15:06

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLES SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
45					772.3				SCH 40 PVC U-Pack Screen	**WELL CASING** Interval: 0.0 - 39.17' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw
		45.40 - 47.50 (SM) SILTY SAND, fine sub-angular sand, non-plastic fines; yellowish gray (5Y 8/1), very micaceous, PWR; non-cohesive, moist, loose	SM		45.40 770.2					
	770	47.50 - 50.00 (SM) SILTY SAND, fine to medium sand, non-plastic fines, some weakly cemented some weakly cemented soft (crumbles with finger pressure) gravels; moderate yellowish brown (10YR 5/4) to dark yellowish brown (10YR 4/2), PWR; non-cohesive, moist, loose	SM		47.50 767.7				PVC Cap	**WELL SCREEN** Interval: 39.17 - 49.17' Material: 39.17 - 49.17' Diameter: 2" ID 4 " OD Slot Size: 0.010 End Cap: Schedule 40 PVC
50		Boring completed at 50.00 ft								**FILTER PACK** Interval: 37.0 - 50.0' Type: 20/40 FilterSil
	765									**FILTER PACK SEAL** Interval: 17.0 - 37.0' Type: Pel-Plug 3/8" Bentonite Pellets
55										**ANNULUS SEAL** Interval: 0.4 - 17.0' Type: High Solids Bentonite (Aquagaurd)
	760									**WELL COMPLETION** Pad: 4' x 4' x 4" Protective Casing: 4" Stainless Steel
60										**DRILLING METHODS** Soil Drill: Sonic Rock Drill: Sonic
	755									~150 gallons of water used while drilling
65										
	750									
70										
	745									
75										
	740									
80										
	735									
85										
	730									
90										

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Jose

GA INSPECTOR: Jeff Ingram
CHECKED BY: Timothy Richards, PG
DATE: 2/12/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 9/2/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-82

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 45.00 ft
LOCATION: East of CCR Unit south of concrete plant

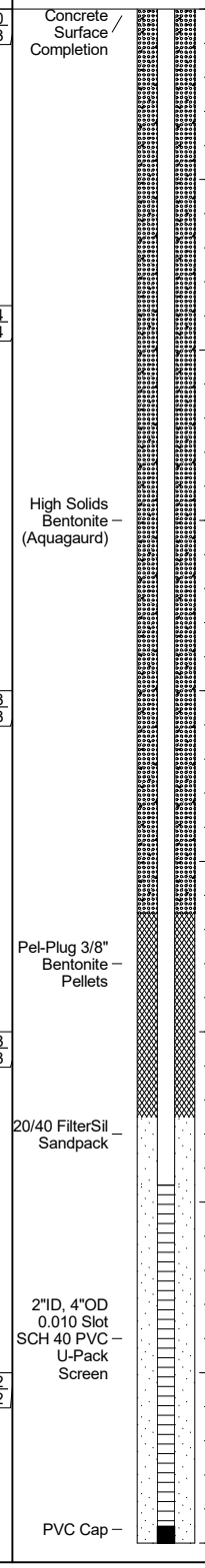
DRILL RIG: Rotosonic 1159
DATE STARTED: 9/21/19
DATE COMPLETED: 9/21/19

NORTHING: 1,393,750.00
EASTING: 2,204,258.10
GS ELEVATION: 807.5
TOC ELEVATION: 810.07 ft

DEPTH W.L.: 8.90
ELEVATION W.L.: 798.6
DATE W.L.: 1/13/2020
TIME W.L.: 15:59

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
0	805	0.00 - 8.70 Hydrovac	NA		798.8	0	ROTO SONIC	0.00 0.73
5	800							
10	795	8.70 - 10.70 (ML) sandy SILT, non-plastic fines, fine sand; dark yellowish brown (10YR 4/2); non-cohesive, dry, loose	ML		8.70 796.8	1	ROTO SONIC	0.94 0.94
15	790	10.70 - 31.70 (SM) sandy SILT, fine to medium angular sand, non-plastic to low plasticity fines, some soft (crumble under finger pressure) fine angular gravel; dark yellowish brown (10YR 4/2) to pale yellowish brown (10YR 6/2), very micaceous, SAPROLITE; non-cohesive, dry, loose. Moist and compact starting at 20 feet bgs.	ML		10.70	2	ROTO SONIC	0.83 0.83
20	785							
25	780					3	ROTO SONIC	0.83 0.83
30	775	31.70 - 35.50 (SP and ML) SAND and SILT, fine sub-angular sand, non-plastic to low plasticity fines; dark yellowish brown (10YR 4/2), highly micaceous, SAPROLITE; non-cohesive, wet, compact	SP & ML		775.8 31.70 772			
35	770	35.50 - 38.50 (CL) sandy SILTY CLAY, low to moderate plasticity fines, fine sand; moderate yellowish brown (10YR 4/2) to light brown (5YR 5/6), some relic foliations, highly micaceous, SAPROLITE; cohesive, w>PL, soft.	CL		35.50 769			
40	765	38.50 - 40.00 (SC) CLAYEY SAND, fine angular sand, low to moderate plasticity fines; light brown (5YR 5/6) to moderate yellowish brown (10YR 5/4), iron oxide staining, very micaceous, some relic foliations, SAPROLITE; non-cohesive, wet, compact	SC		38.50 767.5 40.00	4	ROTO SONIC	0.42 0.42
45		40.00 - 45.00 (ML and SP) SILT and SAND, non-plastic to low plasticity fines, fine sand; dark yellowish brown (10YR 4/2) with frequent relic foliations, very micaceous, SAPROLITE; non-cohesive, wet to moist, compact	ML & SP		762.5			
		Boring completed at 45.00 ft						

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0.0 - 35.0'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 35.0 - 44.5'
Material: Schedule 40 PVC
Schedule 40 PVC
Diameter: 2" ID 4 " OD
Slot Size: 0.010
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 32.5 - 45.0'
Type: 20/40 FilterSil

FILTER PACK SEAL
Interval: 26.5 - 32.5'
Type: Pel-Plug 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0.4 - 26.5'
Type: High Solids Bentonite (Aquagaurd)

WELL COMPLETION
Pad: 4' x 4' x 4"
Protective Casing: 4" Stainless Steel

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic

~200 gallons of water used while drilling

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Jose

GA INSPECTOR: Jeff Ingram
CHECKED BY: Timothy Richards, PG
DATE: 2/12/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 9/2/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-83

SHEET 1 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 50.00 ft
LOCATION: South by river, NW of B-76

DRILL RIG: CME550X
DATE STARTED: 9/30/19
DATE COMPLETED: 9/30/09

NORTHING: 1,390,735.50
EASTING: 2,202,695.60
GS ELEVATION: 777.1
TOC ELEVATION: 776.98 ft

DEPTH W.L.: 28.75
ELEVATION W.L.: 748.35
DATE W.L.: 1/13/2020
TIME W.L.: 14:52

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES
0		0.00 - 15.00 Hydrovac to 15' for utilities									AquaGuard Bentonite Grout
	775										
5											
	770										
10											
	765										
					762.1						
15		15.00 - 19.00 ML, Gravelly SILT with some sand, brown-black, cohesive, W<PL, dry, soft	ML		15.00						
	760				758.1						
		19.00 - 20.00 ML, SILT, micaceous, brown, W<PL, moist, very soft	ML		19.00 757.1	S1	SS	6-4-4	8	1.25 1.50	
20		20.00 - 33.50 ML, SILT, brown, moist, W-PL, firm to stiff			20.00						
	755					S2	SS	2-1-3	4	1.50 1.50	
25			ML								
	750					S3	SS	1-1-2	3	1.50 1.50	
30											
	745				743.6						PEL-PLUG 3/8" Bentonite Pellets
		33.50 - 38.50 CL, silty CLAY, micaceous, dark brown-tan, cohesive, moist, W>PL, very soft to soft			33.50	S4	SS	1-1-2	3	1.50 1.50	
35			CL								
	740				738.6						#2 FilterSil
		38.50 - 43.50 CL, silty CLAY, brown with black and red, W>PL, very soft to soft			38.50	S5	SS	3-3-4	7	1.50 1.50	
40			CL								
	735				733.6						
		43.50 - 49.00 CL, silty CLAY, brown with orange, moist to wet, W<PL, very soft to firm Log continued on next page	CL-ML		43.50	S6	SS	WOH-4-8	12	1.50 1.50	0.010" Slotted
45											

WELL CASING
Interval: 0'-38.6'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 38.6'-48.6'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 36.6'-50'
Type: Filter Media

FILTER PACK SEAL
Interval: 30.7'-36.6'
Type: PEL-PLUG 3/8"

ANNULUS SEAL
Interval: 0'-30.7'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow-Stem Auger
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: K. Minkara
CHECKED BY: Timothy Richards, PG
DATE: 2/11/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-83

SHEET 2 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 50.00 ft
LOCATION: South by river, NW of B-76

DRILL RIG: CME550X
DATE STARTED: 9/30/19
DATE COMPLETED: 9/30/09

NORTHING: 1,390,735.50
EASTING: 2,202,695.60
GS ELEVATION: 777.1
TOC ELEVATION: 776.98 ft

DEPTH W.L.: 28.75
ELEVATION W.L.: 748.35
DATE W.L.: 1/13/2020
TIME W.L.: 14:52

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
45		43.50 - 49.00 CL, silty CLAY, brown with orange, moist to wet, W<PL, very soft to firm *(Continued)*	CL-ML								Schedule 40 PVC	
	730				728.1							
		49.00 - 50.00 SM, silty SAND, PWR, black-brown mica schist	SM		49.00 727.1	S7	SS	8-15-18	33	1.50 1.50		
50		Boring completed at 50.00 ft										
	725											
55												
	720											
60												
	715											
65												
	710											
70												
	705											
75												
	700											
80												
	695											
85												
	690											
90												

WELL CASING
Interval: 0'-38.6'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 38.6'-48.6'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 36.6'-50'
Type: Filter Media

FILTER PACK SEAL
Interval: 30.7'-36.6'
Type: PEL-PLUG 3/8"

ANNULUS SEAL
Interval: 0'-30.7'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow-Stem Auger
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: K. Minkara
CHECKED BY: Timothy Richards, PG
DATE: 2/11/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-84

SHEET 1 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 50.00 ft
LOCATION: NE of security gate, along road

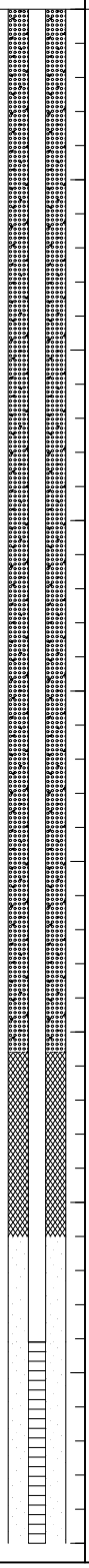
DRILL RIG: CME550X
DATE STARTED: 10/1/19
DATE COMPLETED: 10/1/19

NORTHING: 1,390,411.90
EASTING: 2,202,241.90
GS ELEVATION: 776.6
TOC ELEVATION: 776.34 ft

DEPTH W.L.: 30.12
ELEVATION W.L.: 746.48
DATE W.L.: 1/14/2020
TIME W.L.: 12:32

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	775	0.00 - 14.50 Hydrovac to 14.5' to for utilites								
5	770									
10	765									
15	760	14.50 - 20.00 ML-CL, silty CLAY with some gravel, brown-black, micaceous, W-PL, moist, very soft	CL-ML		762.1 14.50 756.6	S1	SS	3-1-2	3	0.75 1.50
20	755	20.00 - 25.00 ML, sandy SILT with some gravel, brown-black, dry, W<PL, very soft	ML		20.00 751.6	S2	SS	3-2-3	5	0.75 1.50
25	750	25.00 - 30.00 CL, silty CLAY with some gravel, brown-black, micaceous, W-PL, moist, very soft to soft	CL		25.00 746.6	S3	SS	1-2-3	5	1.50 1.50
30	745	30.00 - 35.00 CL, silty CLAY with some sand, brown-black with tan, W-PL, moist	CL		30.00 741.6	S4	SS	2-2-3	5	1.50 1.50
35	740	35.00 - 39.00 CL, silty CLAY, brown-black, W-PL, wet to moist	CL		35.00 737.6	S5	SS	15-18-11	29	1.50 1.50
40	735	39.00 - 40.00 SM, silty SAND with gravel, black-grey, moist, compact 40.00 - 44.00 CL, silty CLAY, brown-black, W-PL, moist, very soft to soft	SM CL		39.00 736.6 40.00 732.6					
45		44.00 - 45.00 ML, gravelly SILT with some sand, Log continued on next page	ML		44.00 731.6	S6	SS	7-7-8	17	1.50 1.50

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-39.1'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screw

WELL SCREEN
Interval: 39.1'-49.1'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 36.0'-49.5'
Type: Filter Media

FILTER PACK SEAL
Interval: 30.6'-36.0'
Type: PEL-PLUG 3/8"

ANNULUS SEAL
Interval: 0'-30.6'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Auger
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: K. Minkara
CHECKED BY: Timothy Richards, PG
DATE: 2/11/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-84

SHEET 2 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 50.00 ft
LOCATION: NE of security gate, along road

DRILL RIG: CME550X
DATE STARTED: 10/1/19
DATE COMPLETED: 10/1/19

NORTHING: 1,390,411.90
EASTING: 2,202,241.90
GS ELEVATION: 776.6
TOC ELEVATION: 776.34 ft

DEPTH W.L.: 30.12
ELEVATION W.L.: 746.48
DATE W.L.: 1/14/2020
TIME W.L.: 12:32

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
45		brown-black, micaceous, PWR, moist 45.00 - 50.00 ML, sandy SILT with gravel, brown-black, PWR, W<PL, wet to moist, PWR, very dense	ML		45.00						Schedule 40 PVC	**WELL CASING** Interval: 0'-39.1' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw
730												**WELL SCREEN** Interval: 39.1'-49.1' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC
50					726.6	S7	SS	25-33-24	57	1.50 1.50		**FILTER PACK** Interval: 36.0'-49.5' Type: Filter Media
		Boring completed at 50.00 ft										**FILTER PACK SEAL** Interval: 30.6'-36.0' Type: PEL-PLUG 3/8"
725												**ANNULUS SEAL** Interval: 0'-30.6' Type: AquaGuard Bentonite Grout
55												**WELL COMPLETION** Pad: 2' x 2' concrete Protective Casing: 8" Round Ground Flush
720												**DRILLING METHODS** Soil Drill: 4.25-inch ID Hollow Stem Auger Rock Drill: N/A
60												
715												
65												
710												
70												
705												
75												
700												
80												
695												
85												
690												
90												

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: K. Minkara
CHECKED BY: Timothy Richards, PG
DATE: 2/11/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-85

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 34.50 ft
LOCATION: North of site, adjacent to B-54

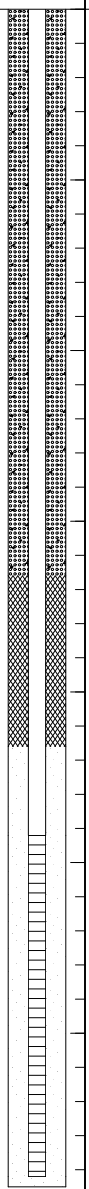
DRILL RIG: CME 550
DATE STARTED: 11/17/19
DATE COMPLETED: 11/18/19

NORTHING: 1,394,433.40
EASTING: 2,203,134.50
GS ELEVATION: 782.7
TOC ELEVATION: 782.54 ft

DEPTH W.L.: 2.27
ELEVATION W.L.: 780.43
DATE W.L.: 1/13/2020
TIME W.L.: 14:16

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	780	0.00 - 10.00 Hydrovac to 10.0' to for utilites			772.7					
10	770	10.00 - 15.00 SM, silty SAND with trace clay, white to grey, fine to coarse sand, well foliated, saprolite, low to no plasticity, W<PL, moist, cohesive	SM		10.00 767.7	1	SPT	4-8-9	17	1.00 1.50
15	765	15.00 - 20.00 SM, silty SAND with some clay and trace gravel, orange to brown and white to grey, fine to coarse sand, saprolite, no plasticity, W<PL, moist, cohesive, firm	SM		15.00 762.7	2	SPT	2-6-8	14	0.50 1.50
20	760	20.00 - 25.00 SW, SAND with some silt, white to grey and brown, fine to coarse sand, saprolite, non-cohesive, moist, compact	SP-SM		20.00 757.7	3	SPT	6-15-12	27	1.00 1.50
25	755	25.00 - 29.50 PWR, AUGEN GNEISS, gravelly sand, grey to white, some orange staining, fine to coarse, moist, very dense	PWR		25.00 753.2	4	SPT	27-50/1	>50	0.50 0.50
30	750	29.50 - 34.50 BEDROCK, AUGEN GNEISS, fresh to slightly weathered, white to light pink, feldspar porphyoclasts up to 1 com in diameter, well foliated, strong to medium strong	GNIESS		29.50 748.2	5	CORE			4.80 5.00
35	745	Boring completed at 34.50 ft								
40	740									
45										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-34.2'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screen

WELL SCREEN
Interval: 24.2'-34.2'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 21.6'-34.5'
Type: Filter Media

FILTER PACK SEAL
Interval: 16.6'-21.6'
Type: PEL-PLUG 3/8"

ANNULUS SEAL
Interval: 0'-16.6'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Auger
Rock Drill: HQ Core Barrell

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: W.Ballow
CHECKED BY: Timothy Richards, PG
DATE: 2/11/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-86

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 34.10 ft
LOCATION: North of site along fence adjacent to B-79

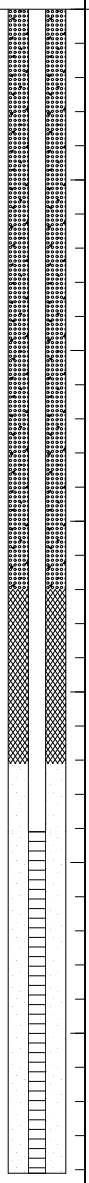
DRILL RIG: CME 550
DATE STARTED: 11/18/19
DATE COMPLETED: 11/18/20

NORTHING: 1,394,480.00
EASTING: 2,203,206.60
GS ELEVATION: 784.6
TOC ELEVATION: 784.29 ft

DEPTH W.L.: 0.91
ELEVATION W.L.: 783.69
DATE W.L.: 1/13/2020
TIME W.L.: 14:54

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	784.6	0.00 - 7.00 Hydrovac to 7.00' to for utilites			777.6 7.00					
5	780									
		7.00 - 18.50 No Recovery			766.1					
10	775									
15	770									
20	765	18.50 - 23.50 SM, silty SAND, white to black and brown, fine to medium sand, saprolite, non-cohesive, wet, compact	SM		18.50 761.1	1	SS	5-10-14	24	1.00 / 1.50
25	760	23.50 - 28.00 SW-SM, SAND with some silt and trace gravel, brown and white to black, saprolite, non-cohesive, wet, compact	SM		23.50 756.6	2	SS	4-9-17	26	1.00 / 1.50
30	755	28.00 - 34.10 Bedrock, AUGEN GNEISS, white to black, fresh to slightly weathered, strong	GNIESS		28.00 750.5	3	CORE			4.00 / 5.00
35	750	Boring completed at 34.10 ft								
40	745									
45	740									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-34.1'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screen

WELL SCREEN
Interval: 24.1'-34.1'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 22.1'-34.1'
Type: Filter Media

FILTER PACK SEAL
Interval: 17'-22.1'
Type: PEL-PLUG 3/8"

ANNULUS SEAL
Interval: 0.0'-17'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Auger
Rock Drill: HQ Core Barrell

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: W.Ballow
CHECKED BY: Timothy Richards, PG
DATE: 2/11/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-87

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 42.00 ft
LOCATION: North of site along fence, ~25 feet north of B-80

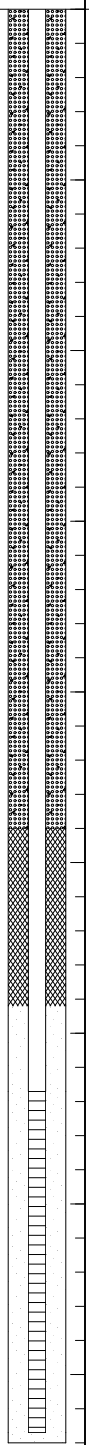
DRILL RIG: CME 550
DATE STARTED: 11/17/19
DATE COMPLETED: 11/17/19

NORTHING: 1,394,401.90
EASTING: 2,203,531.30
GS ELEVATION: 800.4
TOC ELEVATION: 803.37 ft

DEPTH W.L.: 15.56
ELEVATION W.L.: 784.84
DATE W.L.: 1/13/2020
TIME W.L.: 14:54

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	800	0.00 - 10.00 Hydrovac to 10.00' to for utilites								
10	790	10.00 - 15.00 ML, clayey SILT with trace sand, light orange brown, W<PL, firm, cohesive	ML		790.4 10.00					
						1	SS	3-4-5	9	1.50 1.50
15	785	15.00 - 20.00 ML, clayey SILT with some sand, orange brown, saprolite, W<PL, soft to firm. cohesive	ML		785.4 15.00					
						2	SS	2-2-9	11	1.50 1.50
20	780	20.00 - 25.00 MLS, sandy SILT with trace gravel, dark brown, saprolite, non-cohesive, moist, very dense	MLS		780.4 20.00					
						3	SS	9-14-44	>50	1.00 1.50
25	775	25.00 - 28.90 SM, silty SAND with some gravel, fine to coarse sand, dark grey, saprolite, moist to wet, very dense	SM		775.4 25.00					
						4	SS	50/5	>50	0.40 0.40
30	770	28.90 - 33.80 SM, silty SAND, dark grey, saprolite, moist to wet, very dense	SM		771.5 28.90					
						5	SS	50/4	>50	0.30 0.30
35	765	33.80 - 38.80 SM, silty SAND with gravel, white and grey, augen gneiss, moist to wet, very dense	SM		766.6 33.80					
						6	SS	50/4	?50	0.30 0.30
40	760	Boring completed at 42.00 ft			761.6 38.80					
45										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-42'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screen

WELL SCREEN
Interval: 31.7'-41.7'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 29.2'-42.1'
Type: Filter Media

FILTER PACK SEAL
Interval: 24'-29.2'
Type: PEL-PLUG 3/8"

ANNULUS SEAL
Interval: 0'-24'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Auger
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: W.Ballow
CHECKED BY: Timothy Richards, PG
DATE: 2/11/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-88

SHEET 1 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 72.40 ft
LOCATION: North end of site along fence

DRILL RIG: CME 550
DATE STARTED: 11/15/19
DATE COMPLETED: 11/15/19

NORTHING: 1,394,401.10
EASTING: 2,203,738.30
GS ELEVATION: 817.0
TOC ELEVATION: 820.07 ft

DEPTH W.L.: 31.47
ELEVATION W.L.: 785.53
DATE W.L.: 1/13/2020
TIME W.L.: 15:11

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	815	0.00 - 10.00 Hydrovac to 10.00' to for utilites			807					
10	805	10.00 - 15.00 SM, silty SAND with trace gravel, white and orange, saprolite, non-cohesive, dry, loose	SM		10.00 802	1	SS	6-5-2	7	1.50 1.50
15	800	15.00 - 19.00 SM, silty SAND with trace gravel, white and orange, saprolite, non-cohesive, dry, loose	SM		15.00 798					
20	795	19.00 - 20.00 CL-ML, silt CLAY with some sand, brown, W<PL, firm	CL-ML		19.00 797	2	SS	7-5-2	7	1.50 1.50
		20.00 - 25.00 SM, silty SAND with some clay, fine to medium sand, orange and tan, low to no plasticity, W<PL, firm, cohesive	SM		20.00 792	3	SS	2-5-3	8	1.50 1.50
25	790	25.00 - 30.00 SM, silty SAND with some clay, fine to medium sand, orange and tan with white, saprolite, low to no plasticity, W<PL, firm, cohesive	SM		25.00 787	4	SS	2-2-5	7	1.50 1.50
30	785	30.00 - 34.00 SM, silty SAND with some clay, fine to medium sand, orange to tan with brown, saprolite, low to no plasticity, W<PL, firm, cohesive	SM		30.00 783					
		34.00 - 35.00 SM, silty SAND with some clay, fine sand, white, gneissic saprolite, non-cohesive, dense, dry	SM		34.00 782	5	SS	5-13-20	33	1.50 1.50
35	780	35.00 - 40.00 SM, silty SAND, white and grey, fine to medium sand, saprolite, dry, dense	SM		35.00 777	6	SS	13-25-26	51	1.00 1.50
40	775	40.00 - 44.40 ML, clayey SILT with trace sand and gravel, grey and brown some orange, saprolite, W<PL, very dense	ML		40.00 772.6	7	SS	13-50/4	<50	0.90 0.90
45		Log continued on next page	SP		44.40					

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES

AquaGuard Bentonite – Grout

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-72'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screen

WELL SCREEN
Interval: 62'-72'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 60'-72'
Type: Filter Media

FILTER PACK SEAL
Interval: 55'-60'
Type: PEL-PLUG 3/8"

ANNULUS SEAL
Interval: 0'-55'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Auger
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: W.Ballow
CHECKED BY: Timothy Richards, PG
DATE: 2/11/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-88

SHEET 2 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 72.40 ft
LOCATION: North end of site along fence

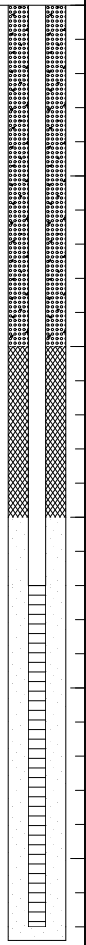
DRILL RIG: CME 550
DATE STARTED: 11/15/19
DATE COMPLETED: 11/15/19

NORTHING: 1,394,401.10
EASTING: 2,203,738.30
GS ELEVATION: 817.0
TOC ELEVATION: 820.07 ft

DEPTH W.L.: 31.47
ELEVATION W.L.: 785.53
DATE W.L.: 1/13/2020
TIME W.L.: 15:11

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
45		44.40 - 48.80 SP, SAND with some gravel, fine to coarse sand, PWR, moist, very dense. PWR at 48.50 feet bgs. *(Continued)*	SP							
	770				768.2	8	SS	50/4	<50	0.30 0.30
		48.80 - 54.40 SP, SAND with some gravel, fine to coarse sand, PWR, moist, very dense			48.80					
50			SP							
	765				762.6	9	SS	33-50/3	<50	0.90 0.90
		54.40 - 59.40 SP, SAND with some silt and gravel, white and orange, fine to coarse sand, saprolite, PWR, moist to wet, very dense			54.40					
55			SP-SM							
	760				757.6	10	SS	23-50/4	<50	0.90 0.90
		59.40 - 63.80 SP, SAND with some silt and gravel, white and orange, fine to coarse sand, saprolite, PWR, moist to wet, very dense			59.40					
60			SP-SM							
	755				753.2	11	SS	50/3	<50	0.30 0.30
		63.80 - 69.00 SP, SAND with some silt and gravel, white and orange, fine to coarse sand, saprolite, PWR, wet, very dense			63.80					
65			SP-SM							
	750				748	12	SS	38-50/1	<50	0.50 0.50
					69.00					
70		Boring completed at 72.40 ft								
	745									
75										
	740									
80										
	735									
85										
	730									
90										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-72'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screen

WELL SCREEN
Interval: 62'-72'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 60'-72'
Type: Filter Media

FILTER PACK SEAL
Interval: 55'-60'
Type: PEL-PLUG 3/8"

ANNULUS SEAL
Interval: 0'-55'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Auger
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: W.Ballow
CHECKED BY: Timothy Richards, PG
DATE: 2/11/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-89

SHEET 1 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 49.50 ft
LOCATION: North of site in cement plant lot, next to retaining wall

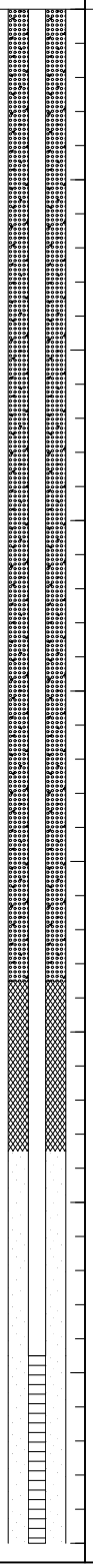
DRILL RIG: CME 550
DATE STARTED: 11/19/19
DATE COMPLETED: 11/19/19

NORTHING: 1,394,398.40
EASTING: 2,204,049.40
GS ELEVATION: 822.6
TOC ELEVATION: 822.36 ft

DEPTH W.L.: 21.78
ELEVATION W.L.: 800.82
DATE W.L.: 1/13/2020
TIME W.L.: 16:36

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	820	0.00 - 10.00 Hydrovac to 10.00' to for utilites			812.6					
10	810	10.00 - 14.80 CL, clayey SILT with some sand and trace gravel, grey brown, cohesive, low to no plasticity, W<PL, firm to stiff	ML		10.00 807.8	1	SS	9-21-50/4	>50	1.20 1.30
15	805	14.80 - 20.00 MLS, sandy SILT with some gravel, brown and dark grey, compact, dry, non cohesive	MLS		14.80 802.6	2	SS	5-10-19	29	1.30 1.50
20	800	20.00 - 25.00 CL, clayey SILT with some sand, grey and brown, saprolite, cohesive, W<PL, firm	ML		20.00 797.6	3	SS	9-17-18	35	1.30 1.50
25	795	25.00 - 29.00 CL, clayey SILT with some sand and trace gravel, grey and brown, highly weathered, saprolite, cohesive, W<PL, firm	ML		25.00 793.6					
30	790	29.00 - 32.50 SP, gravelly SAND with some silt, grey to brown, PWR, non-cohesive, dense, dry	SP		29.00 790.1	4	SS	10-19-23	42	1.50 1.50
		32.50 - 35.00 Bedrock, SCHIST, light grey to dark grey, fresh to slightly weathered, strong to very strong			32.50 787.6	5	CORE			2.50 2.50
35	785	35.00 - 40.00 Bedrock, SCHIST, light grey to dark grey, fresh to slightly weathered, strong to very strong			35.00 782.6					
40	780	40.00 - 44.00 Bedrock, SCHIST, light grey to dark grey, fresh to slightly weathered, strong to very strong			40.00 778.6					
45		Log continued on next page			44.00					

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-49.5'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screen

WELL SCREEN
Interval: 39.5'-49.5'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 33.5'-49.5'
Type: Filter Media

FILTER PACK SEAL
Interval: 28.5'-33.5'
Type: PEL-PLUG 3/8"

ANNULUS SEAL
Interval: 0'-28.5'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Auger
Rock Drill: HQ Core Barrell

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: W.Ballow
CHECKED BY: Timothy Richards, PG
DATE: 2/11/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-89

SHEET 2 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 49.50 ft
LOCATION: North of site in cement plant lot, next to retaining wall

DRILL RIG: CME 550
DATE STARTED: 11/19/19
DATE COMPLETED: 11/19/19

NORTHING: 1,394,398.40
EASTING: 2,204,049.40
GS ELEVATION: 822.6
TOC ELEVATION: 822.36 ft

DEPTH W.L.: 21.78
ELEVATION W.L.: 800.82
DATE W.L.: 1/13/2020
TIME W.L.: 16:36

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
45		44.00 - 49.50 Bedrock, SCHIST, light grey to dark grey, fresh to slightly weathered, strong to very strong *(Continued)*									Schedule 40 PVC	**WELL CASING** Interval: 0'-49.5' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screen **WELL SCREEN** Interval: 39.5'-49.5' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC **FILTER PACK** Interval: 33.5'-49.5' Type: Filter Media **FILTER PACK SEAL** Interval: 28.5'-33.5' Type: PEL-PLUG 3/8" **ANNULUS SEAL** Interval: 0'-28.5' Type: AquaGuard Bentonite Grout **WELL COMPLETION** Pad: 2' x 2' concrete Protective Casing: 8" Round Ground Flush **DRILLING METHODS** Soil Drill: 4.25-inch ID Hollow Stem Auger Rock Drill: HQ Core Barrell
50	775				773.1							
55	770	Boring completed at 49.50 ft										
60	765											
65	760											
70	755											
75	750											
80	745											
85	740											
90	735											

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: W.Ballow
CHECKED BY: Timothy Richards, PG
DATE: 2/11/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-90

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 33.40 ft
LOCATION: North of site along Plant Atkinson Road

DRILL RIG: CME 550
DATE STARTED: 12/10/19
DATE COMPLETED: 12/10/19

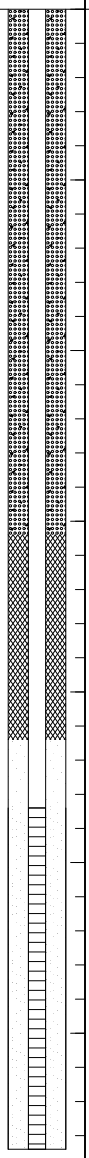
NORTHING: 1,394,501.00
EASTING: 2,203,212.60
GS ELEVATION: 784.2
TOC ELEVATION: 784.00 ft

DEPTH W.L.: 0.88
ELEVATION W.L.: 783.32
DATE W.L.: 1/14/2020
TIME W.L.: 12:32

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)
0	784	0.00 - 6.00 CL, sandy CLAY, some gravel; gray to dark gray, cohesive, w > PL, wet	CLS		778.2
5	780	6.00 - 10.00 ML, sandy SILT, medium to coarse sand, some clay, trace gravel; light brown, cohesive, w ~ PL, wet	MLS		6.00 774.2
10	775	10.00 - 15.00 CL, sandy CLAY, medium to coarse sand; light brown, w ~ PL	CLS		10.00 769.2
15	770	15.00 - 23.00 SM, silty SAND, medium to coarse, some clay; light brown, wet	SM		15.00 761.2
20	765				
25	760	23.00 - 33.00 SM, silty SAND, medium to coarse, some clay, some subround to subangular gravel as feldspar and quartz; light brown to brown, wet, flowing	SM		23.00 751.2
30	755				
35	750	Boring completed at 33.40 ft			33.00
40	745				
45	740				

SAMPLES: SAMPLE NO. | TYPE | REC

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-33.4'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screen

WELL SCREEN
Interval: 23.4'-33.4'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 21.4'-33.4'
Type: #2 FilterSil

FILTER PACK SEAL
Interval: 15.4'-21.4'
Type: PEL-PLUG 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0'-15.4'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Auger
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: W.Ballow
CHECKED BY: Timothy Richards, PG
DATE: 2/11/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-91

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 35.00 ft
LOCATION: North of site along Plant Atkinson Road

DRILL RIG: CME 550
DATE STARTED: 12/11/19
DATE COMPLETED: 12/11/19

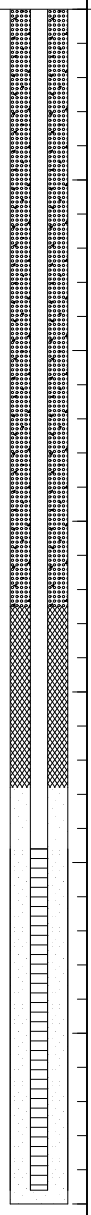
NORTHING: 1,394,447.10
EASTING: 2,203,123.90
GS ELEVATION: 783.1
TOC ELEVATION: 782.98 ft

DEPTH W.L.: 2.90
ELEVATION W.L.: 780.2
DATE W.L.: 1/14/2020
TIME W.L.: 12:34

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	ELEV. / DEPTH (ft)
0	780	0.00 - 5.00 Fill, gravel		778.1
5	775	5.00 - 10.00 ML, SILT, some fine to medium sand, trace gravel; brown and gray, cohesive, w ~ PL	ML	5.00 773.1
10	770	10.00 - 25.00 SP, SAND, medium to coarse, some angular gravel, some clay; gray, noncohesive, wet	SP	10.00 758.1
25	755	25.00 - 35.00 SM, silty SAND, fine to coarse, trace gravel; light brown, wet	SM	25.00 748.1
35	745	Boring completed at 35.00 ft		
40	740			
45				

SAMPLES: SAMPLE NO. | TYPE | REC

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-35'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screen

WELL SCREEN
Interval: 24.6'-34.6'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 22.8'-35'
Type: #2 FilterSil

FILTER PACK SEAL
Interval: 17.5'-22.5'
Type: PEL-PLUG 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0'-17.5'
Type: Portland Cement, AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Auger
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: W.Ballow
CHECKED BY: Timothy Richards, PG
DATE: 2/11/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-92

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 25.00 ft
LOCATION: North of site along Plant Atkinson Road

DRILL RIG: CME 550
DATE STARTED: 12/11/19
DATE COMPLETED: 12/11/19

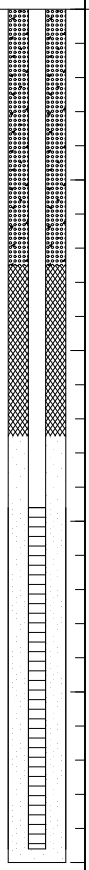
NORTHING: 1,394,392.70
EASTING: 2,203,026.70
GS ELEVATION: 785.3
TOC ELEVATION: 785.08 ft

DEPTH W.L.: 3.88
ELEVATION W.L.: 781.42
DATE W.L.: 1/14/2020
TIME W.L.: 12:36

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)
0	785	0.00 - 2.00 SP, gravelly SAND, medium to coarse; brown, non-cohesive, moist	SP		783.3
		2.00 - 10.00 CL-ML, silty CLAY, some sand, trace gravel; brown and gray, cohesive, w ~ PL	CL-ML		2.00
10	775	10.00 - 25.00 SC, clayey SAND, medium to coarse, some silt, some gravel; brown, wet	SC		775.3 10.00
25	760	Boring completed at 25.00 ft			760.3

SAMPLES: SAMPLE NO. | TYPE | REC

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-25'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screen

WELL SCREEN
Interval: 14.6'-24.6'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 12.5'-25.0'
Type: #2 FilterSil

FILTER PACK SEAL
Interval: 7.5'-12.5'
Type: PEL-PLUG 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0'-7.5'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Auger
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: W.Ballow
CHECKED BY: Timothy Richards, PG
DATE: 2/11/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-93

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 29.20 ft
LOCATION: West of site on site along Plant Atkinson Road

DRILL RIG: CME 550
DATE STARTED: 12/12/19
DATE COMPLETED: 12/12/19

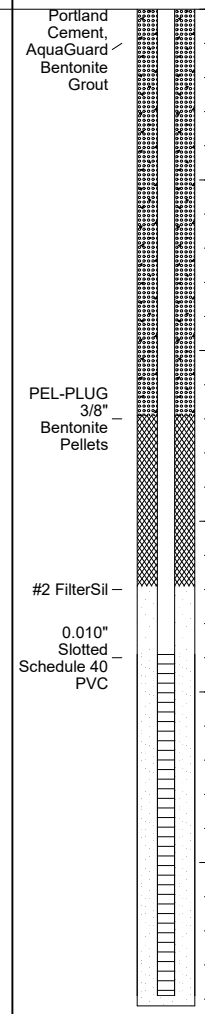
NORTHING: 1,394,348.70
EASTING: 2,202,946.70
GS ELEVATION: 789.2
TOC ELEVATION: 789.07 ft

DEPTH W.L.: 4.86
ELEVATION W.L.: 784.34
DATE W.L.: 1/14/2020
TIME W.L.: 12:38

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	ELEV. / DEPTH (ft)
0		0.00 - 5.00 SC, clayey SAND, fine to coarse; brown and orange-brown, non-cohesive, moist	SC	784.2 / 5.00
5	785	5.00 - 10.00 ML, clayey SILT, some sand, trace gravel; brown to light brown, cohesive, w < PL	ML	779.2 / 10.00
10	780	10.00 - 15.00 ML, sandy SILT, coarse sand, some clay; gray-brown, cohesive, w < PL	ML	774.2 / 15.00
15	775	15.00 - 20.00 ML, sandy SILT, coarse sand, some clay; brown, cohesive, w ~ PL	ML	769.2 / 20.00
20	770	20.00 - 29.20 SM, silty SAND, fine to coarse, some clay, trace gravel; brown and gray-brown, wet	SM	760
25	765			
30	760	Boring completed at 29.20 ft		
35	755			
40	750			
45	745			

SAMPLES: SAMPLE NO. | TYPE | REC

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-29.2'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush/Screen

WELL SCREEN
Interval: 18.9'-28.9'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 16.9'-29.2'
Type: #2 FilterSil

FILTER PACK SEAL
Interval: 11.9'-16.9'
Type: PEL-PLUG 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0'-11.9'
Type: Portland Cement, AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 2' x 2' concrete
Protective Casing: 8" Round Ground Flush

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Augers
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: W.Ballow
CHECKED BY: Timothy Richards, PG
DATE: 2/11/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 8/24/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-94

SHEET 1 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 45.24 ft
LOCATION: Northeast side, on property line

DRILL RIG: CME 550
DATE STARTED: 1/21/20
DATE COMPLETED: 1/23/20

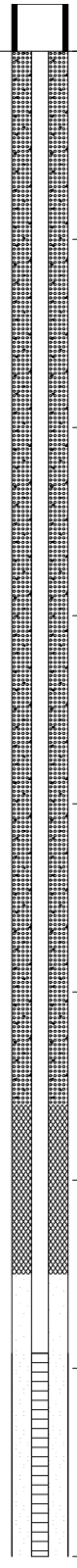
NORTHING: 1,394,402.0
EASTING: 2,203,513.7
GS ELEVATION: 799.2
TOC ELEVATION: 801.74 ft

DEPTH W.L.: 13.81 ft bTOC
ELEVATION W.L.: 770.49
DATE W.L.: 1/28/2020
TIME W.L.: 16:44

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0		0.00 - 9.00 CL, silty CLAY, medium plasticity, some sand; reddish brown, cohesive, w > PL, soft	CL			S-01	GRAB			0.00 0.75
5	795									
					790.2					
10	790	9.00 - 13.50 ML, SILT, non-plastic, trace sand; orange-brown, micaceous, non-cohesive, moist, firm to stiff	ML		9.00	S-02	DO	2-2-4	6	1.50 1.50
					785.7					
15	785	13.50 - 45.24 SM, silty SAND, fine; mottled tan-brown and white, micaceous, saprolitic, non-cohesive, dry to moist, very dense			13.50	S-03	DO	18-24-33	57	1.50 1.50
		18.50: Compact				S-04	DO	6-10-20	30	1.50 1.50
20	780									
25	775		SM			S-05	DO	4-5-16	21	1.42 1.50
		28.50: Trace quartz gravel from pegmatitic vein, dense				S-06	DO	21-24-22	46	1.08 1.50
30	770	30.00: Trace quartz gravel, very dense				S-07	DO	10-50	50/4	0.83 0.83
						S-08	DO	50	50/3	0.25 0.25
						S-09	DO	50	50/5	0.42 0.42
35	765					S-10	DO	50	50/4	0.33
						S-11	DO	50	50/3	0.33 0.58 0.25
		37.50: 1.0" pegmatitic vein consisting of potassium feldspar and plagioclase feldspar				S-12	DO	50	50/4	0.83 0.83
40	760					S-13	DO	19-50	50/2	0.17 0.17

Log continued on next page

MONITORING WELL DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0 ft-bgs - 45 ft-bgs
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush

WELL SCREEN
Interval: 34.6 ft-bgs - 44.6 ft-bgs
Material: Schedule 40 PVC
Diameter: 3"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 32.5 ft-bgs - 44.6 ft-bgs
Type: FilterSII Sand
Quantity: 8 bags (50 lb/bag)

FILTER PACK SEAL
Interval: 28 ft-bgs - 32.5 ft-bgs
Type: PEL-PLUG 3/8" Bentonite Pellets
Quantity: 2 buckets

ANNULUS SEAL
Interval: 0 ft-bgs - 28 ft-bgs
Type: Portland Cement, AquaGuard Bentonite Grout
Quantity: 60 gal H20, 100 lb

WELL COMPLETION
Pad: 4' x 4' Concrete Pad
Protective Casing: Aluminum Riser

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Augers
Rock Drill: N/A

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: Heather Brissey & Michael Boatman PG
CHECKED BY: Timothy Richards, PG
DATE: 2/11/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 10/22/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-94

SHEET 2 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 45.24 ft
LOCATION: Northeast side, on property line

DRILL RIG: CME 550
DATE STARTED: 1/21/20
DATE COMPLETED: 1/23/20

NORTHING: 1,394,402.0
EASTING: 2,203,513.7
GS ELEVATION: 799.2
TOC ELEVATION: 801.74 ft

DEPTH W.L.: 13.81 ft bTOC
ELEVATION W.L.: 770.49
DATE W.L.: 1/28/2020
TIME W.L.: 16:44

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC	MONITORING WELL DIAGRAM and NOTES
40		13.50 - 45.24 SM, silty SAND, fine; mottled tan-brown and white, micaceous, saprolitic, non-cohesive, dry to moist, very dense *(Continued)* 42.00: Trace gravel	SM			S-14	DO	50	50/2	0.17 0.17	
						S-15	DO	8-26-50	76/10	0.83 0.83	
	755					S-16	DO	50	50/4	0.33 0.33	
45					753.96						
		Boring completed at 45.24 ft									
	750										
50											
	745										
55											
	740										
60											
	735										
65											
	730										
70											
	725										
75											
	720										
80											

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0 ft-bgs - 45 ft-bgs
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Flush

WELL SCREEN
Interval: 34.6 ft-bgs - 44.6 ft-bgs
Material: Schedule 40 PVC
Diameter: 3"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 32.5 ft-bgs - 44.6 ft-bgs
Type: FilterSII Sand
Quantity: 8 bags (50 lb/bag)

FILTER PACK SEAL
Interval: 28 ft-bgs - 32.5 ft-bgs
Type: PEL-PLUG 3/8" Bentonite Pellets
Quantity: 2 buckets

ANNULUS SEAL
Interval: 0 ft-bgs - 28 ft-bgs
Type: Portland Cement, AquaGuard Bentonite Grout
Quantity: 60 gal H20, 100 lb

WELL COMPLETION
Pad: 4' x 4' Concrete Pad
Protective Casing: Aluminum Riser

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Augers
Rock Drill: N/A

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: Heather Brissey & Michael Boatman PG
CHECKED BY: Timothy Richards, PG
DATE: 2/11/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 10/22/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-95

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 33.30 ft
LOCATION: East of B-96

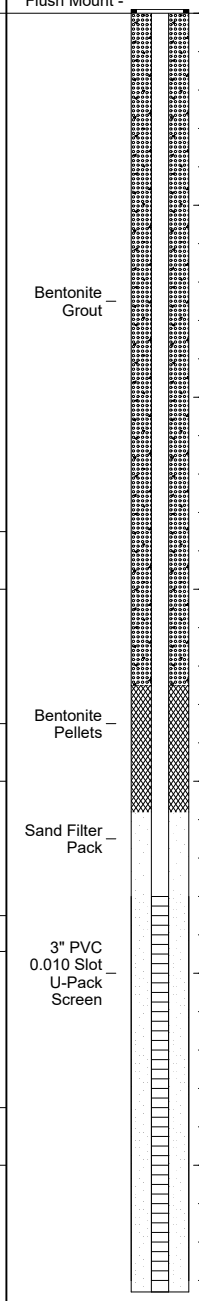
DRILL RIG: CME 550
DATE STARTED: 2/11/20
DATE COMPLETED: 2/11/20

NORTHING: 1,394,518.6
EASTING: 2,203,167.7
GS ELEVATION: 784.3
TOC ELEVATION: 784.00 ft

DEPTH W.L.: 1.7 ft bTOC
ELEVATION W.L.: 782.3
DATE W.L.: 2/26/2020
TIME W.L.: 13:49

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0		0.00 - 10.00 Hydro Vac'd for utilities clearance								
5	780									
10	775				774.3					
		10.00 - 13.50			10.00					
					770.8					
15	770	13.50 - 33.30 SANDY SILT, low plasticity, fine grained sand; brown; non-cohesive, wet, loose	ML		13.50	S-01	DO	3-3-4	7	N/A / 1.50
20	765	18.50: SANDY SILT, low plasticity, fine grained sand; tan, orange, bronze, laminated, saprolite (gneiss parent rock), micaceous; non-cohesive, moist, very dense				S-02	DO	14-27-27	54	N/A / 1.50
25	760	23.50: Trace fine gravel				S-03	DO	8-50	50/5	N/A / 0.92
30	755	28.50: Compact				S-04	DO	3-2-8	10	N/A / 1.50
					751					
35	750	Boring completed at 33.30 ft								
40	745									

MONITORING WELL DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0 ft-bgs - 33.3 ft-bgs
Material: PVC
Diameter: 2"
Joint Type: Flush

WELL SCREEN
Interval: 23 ft-bgs - 33 ft-bgs
Material: Schedule 40 PVC
Diameter: 3"
Slot Size: 0.010"
End Cap: 4"

FILTER PACK
Interval: 20.8 ft-bgs - 33.3 ft-bgs
Type: FilterSil Sand
Quantity: 7 bags (50 lb/bag)

FILTER PACK SEAL
Interval: 17.5 ft-bgs - 20.5 ft-bgs
Type: PEL-PLUG 3/8" Bentonite Pellets
Quantity: 2 buckets

ANNULUS SEAL
Interval: 0 ft-bgs - 17.5 ft-bgs
Type: Portland Cement, AquaGuard Bentonite Grout
Quantity:

WELL COMPLETION
Pad: 2'x2' Concrete Pad
Protective Casing: 8" Round Flush Mount

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Augers
Rock Drill: N/A

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: Heather Brissey
CHECKED BY: Timothy Richards, PG
DATE: 4/28/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 10/22/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-96

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 33.10 ft
LOCATION: North side of AP4

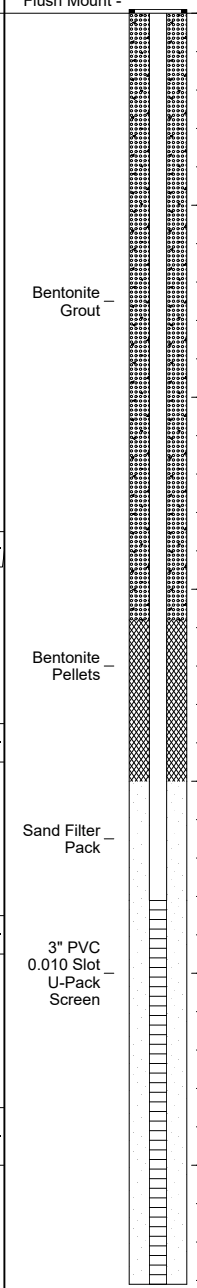
DRILL RIG: CME 550
DATE STARTED: 2/10/20
DATE COMPLETED: 2/10/20

NORTHING: 1,394,478.7
EASTING: 2,203,099.3
GS ELEVATION: 785.3
TOC ELEVATION: 784.92 ft

DEPTH W.L.: 4.31 ft bTOC
ELEVATION W.L.: 780.61
DATE W.L.: 2/26/2020
TIME W.L.: 15:14

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	785	0.00 - 10.00 Hydro Vac'd for utilities clearance								
					775.3					
10	775	10.00 - 13.50			10.00					
					771.8					
		13.50 - 33.10 SILTY SAND, low to no plasticity; light grey, saprolitic (gneiss parent rock); non-cohesive, dry to moist, very dense			13.50	S-01	DO	50	50/5	0.17 0.50
15	770									
						S-02	DO	4-50	50/3	0.50 1.00
20	765									
		23.50: grey to tan	SM			S-03	DO	17-50	50/5	1.00 1.00
25	760									
		28.50: Iron staining				S-04	DO	5-26-50	76/11	1.30 1.50
30	755									
					752.2					
		Boring completed at 33.10 ft								
35	750									
40										

MONITORING WELL DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0 ft-bgs - 33.1 ft-bgs
Material: PVC
Diameter: 2"
Joint Type: Flush

WELL SCREEN
Interval: 23.1 ft-bgs - 33.1 ft-bgs
Material: Schedule 40 PVC
Diameter: 3"
Slot Size: 0.010"
End Cap: 4"

FILTER PACK
Interval: 20 ft-bgs - 33.1 ft-bgs
Type: FilterSil Sand
Quantity: 8 bags (50 lb/bag)

FILTER PACK SEAL
Interval: 15.8 ft-bgs - 20 ft-bgs
Type: PEL-PLUG 3/8" Bentonite Pellets
Quantity: 2 buckets

ANNULUS SEAL
Interval: 0 ft-bgs - 15.8 ft-bgs
Type: Portland Cement, AquaGuard Bentonite Grout
Quantity: 50 lbs

WELL COMPLETION
Pad: 2'x2' Concrete Pad
Protective Casing: 8" Round Flush Mount

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Augers
Rock Drill: N/A

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: Michael Boatman PG
CHECKED BY: Timothy Richards, PG
DATE: 4/28/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 10/22/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-97

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 31.70 ft
LOCATION: East of B-98

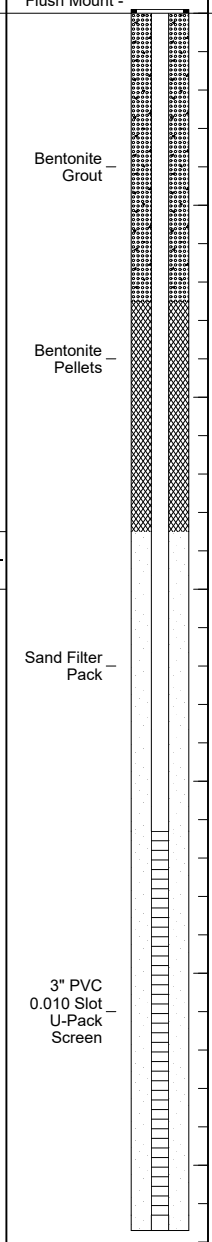
DRILL RIG: CME 550
DATE STARTED: 2/11/20
DATE COMPLETED: 2/11/20

NORTHING: 1,394,430.0
EASTING: 2,203,008.3
GS ELEVATION: 786.6
TOC ELEVATION: 786.29 ft

DEPTH W.L.: 3.24 ft bTOC
ELEVATION W.L.: 783.05
DATE W.L.: 2/27/2020
TIME W.L.: 10:54

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
0	785	0.00 - 10.00 Hydro Vac'd for utilities clearance			776.6					
10	775	10.00 - 13.50			10.00 773.1					
15	770	13.50 - 16.00 gravelly SILTY SAND, no plasticity, medium grained sand, coarse gravel; tan to dark brown; non-cohesive, moist, compact	SM		13.50 770.6	S-01	DO	15-17-15	32	0.92 / 1.50
20	765	16.00 - 31.70 Fresh, foliated, dark grey and white, fine to coarse grained, strong, GNEISS			16.00					
25	760	29.00: Slightly weathered, porous, medium strong								
30	755	Boring completed at 31.70 ft			754.9 31.70					
35	750									
40										

MONITORING WELL DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0 ft-bgs - 31.7 ft-bgs
Material: PVC
Diameter: 2"
Joint Type: Flush

WELL SCREEN
Interval: 21.3 ft-bgs - 31.3 ft-bgs
Material: Schedule 40 PVC
Diameter: 3"
Slot Size: 0.010"
End Cap: 4"

FILTER PACK
Interval: 13.5 ft-bgs - 21.3 ft-bgs
Type: FilterSil Sand
Quantity: 1.5 (50 lb/bag)

FILTER PACK SEAL
Interval: 7.5 ft-bgs - 13.5 ft-bgs
Type: PEL-PLUG 3/8" Bentonite Pellets
Quantity: 2 buckets

ANNULUS SEAL
Interval: 0 ft-bgs - 7.5 ft-bgs
Type: Portland Cement, AquaGuard Bentonite Grout
Quantity:

WELL COMPLETION
Pad: 2'x2' Concrete Pad
Protective Casing: 8" Round Flush Mount

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Augers
Rock Drill: HQ Core Barrell

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Southern Company Services
DRILLER: S. Milam

GA INSPECTOR: Heather Brissey
CHECKED BY: Timothy Richards, PG
DATE: 4/28/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 10/22/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-98

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 19.40 ft
LOCATION: West of B-97

DRILL RIG: Geoprobe 7822DT
DATE STARTED: 2/10/20
DATE COMPLETED: 2/10/20

NORTHING: 1,394,392.5
EASTING: 2,202,934.0
GS ELEVATION: 789.8
TOC ELEVATION: 789.67 ft

DEPTH W.L.: 5.33 ft bTOC
ELEVATION W.L.: 784.34
DATE W.L.: 2/27/2020
TIME W.L.: 10:36

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	REC	MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0		0.00 - 10.00 Hydro Vac'd for utilities clearance							Flush Mount -	
5	785								Bentonite Grout	
10	780				779.8				Bentonite Pellets	
		10.00 - 19.40 Augered through with Geoprobe. No Soil data collected			10.00				Sand Filter Pack	
15	775								3" PVC 0.010 Slot U-Pack Screen	
					770.4					
20	770	Boring completed at 19.40 ft								
25	765									
30	760									
35	755									
40	750									

WELL CASING
Interval: 0 ft-bgs - 19.4 ft-bgs
Material: PVC
Diameter: 2"
Joint Type: Flush

WELL SCREEN
Interval: 9 ft-bgs- 19 ft-bgs
Material: Schedule 40 PVC
Diameter: 3"
Slot Size: 0.010"
End Cap: 4"

FILTER PACK
Interval: 7 ft-bgs - 9 ft-bgs
Type: FilterSil Sand
Quantity: 6 bags (50 lbs/bag)

FILTER PACK SEAL
Interval: 4 ft-bgs - 7 ft-bgs
Type: PEL-PLUG 3/8" Bentonite Pellets
Quantity: 1 bucket

ANNULUS SEAL
Interval: 0 ft-bgs - 4 ft-bgs
Type: Portland Cement, AquaGuard Bentonite Grout
Quantity:

WELL COMPLETION
Pad: 2'x2' Concrete Pad
Protective Casing: 8" Round Flush Mount

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Augers
Rock Drill: N/A

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Cascade
DRILLER: Eladio Gonzalaz

GA INSPECTOR: Heather Brissey
CHECKED BY: Timothy Richards, PG
DATE: 4/28/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 10/22/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-99

SHEET 1 of 1

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 12.30 ft
LOCATION: Smyrna, GA

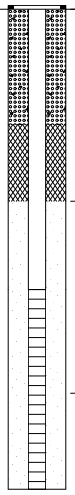
DRILL RIG: CME 550X
DATE STARTED: 7/7/20
DATE COMPLETED: 7/7/20

NORTHING: 1,394,524.2
EASTING: 2,203,084.5
GS ELEVATION: 782.6
TOC ELEVATION: 782.39 ft

DEPTH W.L.:5.93
ELEVATION W.L.: 776.46
DATE W.L.:7/7/20
TIME W.L.:16:10

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
0	780	0.00 - 5.00 GRAVEL WITH SILT; non-native, brown to brown-tan with some red, silty, poorly graded gravel with some concrete fill, some organics, slightly weathered, non-cohesive, moist to wet, loose to compact (fill)	GW-GM		777.6	R1		1.03
5	775	5.00 - 9.00 GRAVEL WITH SILT; non-native, brown to brown tan with red, silty, poorly graded gravel with some comcrete fill, some organics, slightly weathered, non-cohesive, wet, loose to compact (fill)	GW-GM		5.00 773.6			
10	770	9.00 - 12.30 SILTY GRAVEL; brown, tan and red, non-cohesive, wet, loose to compact (mix of fill and saprolite)	GM		9.00 770.3			
15	765	Boring completed at 12.30 ft						
20	760							
25	755							
30	750							
35	745							
40								

MONITORING WELL DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-12'3"
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Screw fit with rubber seam

WELL SCREEN
Interval: 7'3"-12'3"
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 5"-12'3"
Type: Filtersil std61
Quantity: 6 bags (50 lbs/bag)

FILTER PACK SEAL
Interval: 3'-5'
Type: 3/8" Coated Pel-Plug
Quantity: 1 bucket

ANNULUS SEAL
Interval: 0'-3'
Type: Aquagaurd Bentonite Grout
Quantity: 8 bags ~90 gal H2O

WELL COMPLETION
Pad: 4'x4'x4"
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Augers
Rock Drill: N/A

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: SCS CFS
DRILLER: S. Deuty

GA INSPECTOR: Chris Tidwell
CHECKED BY: Brian Steele, PG
DATE: 8/24/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 10/22/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-100

SHEET 1 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 45.00 ft
LOCATION: Smyrna, GA

DRILL RIG: CME 550X
DATE STARTED: 7/8/20
DATE COMPLETED: 7/8/20

NORTHING: 1,390,254.8
EASTING: 2,202,242.1
GS ELEVATION: 775.3
TOC ELEVATION: 777.95 ft

DEPTH W.L.:34.78
ELEVATION W.L.: 743.17
DATE W.L.:7/8/20
TIME W.L.:15:50

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE / REC	MONITORING WELL DIAGRAM and NOTES
0	775	0.00 - 13.50 SILT-SILTY GRAVEL; mix of topsoil, residuum, fill, rip-rap boulders, soil; clayey silt, red-brown, micaceous, moist, moderately weathered, non-cohesive, moist, (backfilled cuttings)	ML-GM			R1	AUGER		0.00 / 11.00	Stick Up -
5	770									Bentonite Grout
10	765				761.8					
15	760	13.50 - 18.50 SILT; with sand, gravel and trace clay, red-brown, highly weathered, non-cohesive, dry to moist, loose to compact	ML		13.50 756.8	R2	SS	3-3-2	1.45 / 1.50	
20	755	18.50 - 23.50 SILTY SAND; heavy organic matter (wood), red-brown with black organic matter, moderately weathered, non-cohesive, dry, loose	SM		18.50 751.8	R3	SS	3-3-2	0.60 / 1.50	
25	750	23.50 - 28.50 CLAYEY SAND; some organic matter, brown, silightly weathered, cohesive, w<PL, soft	SC		23.50 746.8	R4	SS	2-1-2	1.60 / 1.50	
30	745	28.50 - 33.50 CLAYEY SAND WITH SILT; trace organic matter, brown with some red, micaceous, moderately weathered, cohesive, w>PL, firm to soft, moist to wet	SC-SM		28.50 741.8	R5	SS	1-2-1	1.50 / 1.50	Bentonite Pellets Sand Filter Pack
35	740	33.50 - 38.50 CLAYEY SAND; some silt, red with some brown, highly weathered trace mica, cohesive, w>PL, wet, soft to very soft, trace gravel	SC		33.50 736.8	R6	SS	WH-WH-2	1.40 / 1.50	
40			SC		38.50	R7	SS	2-6-22	1.30 / 1.50	3" PVC 0.010 Slot
		Log continued on next page								

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-44'8"
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Screw fit with rubber seam

WELL SCREEN
Interval: 34'8"-44'8"
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 32'2"-44'8"
Type: Filtersil std61
Quantity: 6 bags (50 lbs/bag)

FILTER PACK SEAL
Interval: 30'-32'2"
Type: 3/8" Coated Pel-Plug
Quantity: 1 bucket

ANNULUS SEAL
Interval: 2'-30'
Type: Aquagaurd Bentonite Grout
Quantity: 8 bags ~90 gal H2O

WELL COMPLETION
Pad: 4'x4'x4"
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: Auger
Rock Drill: N/A

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: SCS CFS
DRILLER: S. Deuty

GA INSPECTOR: Chris Tidwell
CHECKED BY: Brian Steele, PG
DATE: 8/24/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 10/28/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE B-100

SHEET 2 of 2

PROJECT: Plant McDonough
PROJECT NUMBER: 1668496.18
DRILLED DEPTH: 45.00 ft
LOCATION: Smyrna, GA

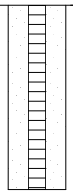
DRILL RIG: CME 550X
DATE STARTED: 7/8/20
DATE COMPLETED: 7/8/20

NORTHING: 1,390,254.8
EASTING: 2,202,242.1
GS ELEVATION: 775.3
TOC ELEVATION: 777.95 ft

DEPTH W.L.:34.78
ELEVATION W.L.: 743.17
DATE W.L.:7/8/20
TIME W.L.:15:50

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N-VALUE	REC
40	735	38.50 - 42.50 CLAYEY SAND; some gravel of gneiss (bottom 0.5'), black-brown with red, highly weathered, non-cohesive, wet, loose to compact *(Continued)*	SC		732.8					
		42.50 - 45.00 CLAYEY SAND; some gravel, red with black and brown, highly weathered, cohesive, w~PL, firm to soft, micaceous schist gravel	SC		42.50 730.3	R8	SS	4-5-12		0.00 1.50
45	730	Boring completed at 45.00 ft			45.00					
50	725									
55	720									
60	715									
65	710									
70	705									
75	700									
80										

MONITORING WELL DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-44'8"
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Screw fit with rubber seam

WELL SCREEN
Interval: 34'8"-44'8"
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 32'2"-44'8"
Type: Filtersil std61
Quantity: 6 bags (50 lbs/bag)

FILTER PACK SEAL
Interval: 30'-32'2"
Type: 3/8" Coated Pel-Plug
Quantity: 1 bucket

ANNULUS SEAL
Interval: 2'-30'
Type: Aquagaurd Bentonite Grout
Quantity: 8 bags ~90 gal H2O

WELL COMPLETION
Pad: 4'x4'x4"
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: Auger
Rock Drill: N/A

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: SCS CFS
DRILLER: S. Deuty

GA INSPECTOR: Chris Tidwell
CHECKED BY: Brian Steele, PG
DATE: 8/24/20

GOLDER

BOREHOLE RECORD MCDONOUGH MASTER LIST_BACKUP_SURVEY UPDATED (5).GPJ PIEDMONT.GDT 10/28/20

DRILLER BONDS

CLIENT'S COPY

SURETY BOND CONTINUATION CERTIFICATE

TO: State of Georgia
Division of Environmental Protection
2 Martin Luther King Jr. Drive SE
Suite 1252
Atlanta, GA 30334

To be attached to and form a part of: Performance Bond for Well Contractors and Drillers

Principal on the Bond: Michael C. Rice/Cascade Drilling, L.P.

Surety Bond Number: K08315607

Bond Amount: Twenty Thousand and 00/100 Dollars ($20,000.00)

In consideration of the agreed premium charged for this bond, it is understood and agreed that the following change shall be made to this obligation:

[x] **CONTINUATION CERTIFICATE**

This certificate extends the life of the bond to June 30, 2017. It is executed upon the express condition that the surety's liability under said bond, together with this and all previous continuation certificates, shall not be cumulative and shall in no event exceed the amount specifically set forth in said bond or any existing certificate changing the amount of said bond.

Signed, sealed and dated this 26th day of May , 2015 .

Westchester Fire Insurance Company

By: Katie J
Katie Snider, Attorney-in-Fact

Surety of Record: Westchester Fire Insurance Company
436 Walnut Street
Philadelphia, PA 19106
Phone: (415) 547-4513

Agent of Record: Kibble & Prentice, a USI Company
601 Union Street, Suite 1000
Seattle, WA 98101
Phone: (206) 441-6300

Power of Attorney

WESTCHESTER FIRE INSURANCE COMPANY

Know all men by these presents: That **WESTCHESTER FIRE INSURANCE COMPANY,** a corporation of the Commonwealth of Pennsylvania pursuant to the following Resolution, adopted by the Board of Directors of the said Company on December 11, 2006, to wit:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into the ordinary course of business (each a "Written Commitment"):

(1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.

(2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such persons written appointment as such attorney-in-fact.

(3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.

(4) Each of the Chairman, the President and Vice Presidents of the Company in hereby authorized, for and on behalf of the Company, to delegate in writing any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company's seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.

(5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested.

Does hereby nominate, constitute and appoint Heather Allen, Holly E Ulfers, Katie Snider, Nancy N Hill, Roxana Palacios, Steven W Palmer, all of the City of SEATTLE, Washington, each individually if there be more than one named, its true and lawful attorney-in-fact, to make, execute, seal and deliver on its behalf, and as its act and deed any and all bonds, undertakings, recognizances, contracts and other writings in the nature thereof in penalties not exceeding Fifteen million dollars & zero cents ($15,000,000.00) and the execution of such writings in pursuance of these presents shall be as binding upon said Company, as fully and amply as if they had been duly executed and acknowledged by the regularly elected officers of the Company at its principal office,

IN WITNESS WHEREOF, the said Stephen M. Haney, Vice-President, has hereunto subscribed his name and affixed the Corporate seal of the said **WESTCHESTER FIRE INSURANCE COMPANY** this 22 day of December 2014.

WESTCHESTER FIRE INSURANCE COMPANY

Stephen M. Haney

Stephen M. Haney, Vice President

COMMONWEALTH OF PENNSYLVANIA
COUNTY OF PHILADELPHIA ss.

On this 22 day of December, AD. 2014 before me, a Notary Public of the Commonwealth of Pennsylvania in and for the County of Philadelphia came Stephen M. Haney, Vice-President of the **WESTCHESTER FIRE INSURANCE COMPANY** to me personally known to be the individual and officer who executed the preceding instrument, and he acknowledged that he executed the same, and that the seal affixed to the preceding instrument is the corporate seal of said Company; that the said corporate seal and his signature were duly affixed by the authority and direction of the said corporation, and that Resolution, adopted by the Board of Directors of said Company, referred to in the preceding instrument, is now in force.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal at the City of Philadelphia the day and year first above written.

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
KAREN E. BRANDT, Notary Public
City of Philadelphia, Phila. County
My Commission Expires Sept. 26, 2018

Karen E. Brandt

Notary Public

I, the undersigned Assistant Secretary of the **WESTCHESTER FIRE INSURANCE COMPANY,** do hereby certify that the original POWER OF ATTORNEY, of which the foregoing is a substantially true and correct copy, is in full force and effect.

In witness whereof, I have hereunto subscribed my name as Assistant Secretary, and affixed the corporate seal of the Corporation, this 26th day of May, 2015.

William L. Kelly

William L. Kelly, Assistant Secretary

THIS POWER OF ATTORNEY MAY NOT BE USED TO EXECUTE ANY BOND WITH AN INCEPTION DATE AFTER December 22, 2016.

CONTINUATION CERTIFICATE

SAFECO Insurance Company of America , Surety upon

a certain Bond No. 4993104

dated effective June 30, 1987
(MONTH-DAY-YEAR)

on behalf of Southern Company Services, Inc.
(PRINCIPAL)

and in favor of Georgia - Dept. of Natural Resources
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on June 30, 2016
(MONTH-DAY-YEAR)

and ending on June 30, 2017
(MONTH-DAY-YEAR)

Amount of bond $10,000.00

Description of bond Water Well Contractors & Drillers

PROVIDED: That this continuation certificate does not create a new obligation and is executed upon the express condition and provision that the Surety's liability under said bond and this and all Continuation Certificates issued in connection therewith shall not be cumulative and that the said Surety's aggregate liability under said bond and this and all such Continuation Certificates on account of all defaults committed during the period (regardless of the number of years) said bond had been and shall be in force, shall not in any event exceed the amount of said bond as hereinbefore set forth.

Signed and dated on April 07, 2016
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

By _____

D-Ann Kleidosty, Attorney-in-Fact

S-0157/GEEF 11/99

THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 7310252

First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Brooke A. Sharp; Christine Doczy; D-Ann Kleidosty; Gary D. Eklund; Sharon J. Potts; Sylvia M. Ogle; William G. Moody

all of the city of Atlanta, state of GA each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 1st day of April, 2016.

First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

By: _____
David M. Carey, Assistant Secretary

STATE OF PENNSYLVANIA ss
COUNTY OF MONTGOMERY

On this 1st day of April, 2016, before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Plymouth Meeting, Pennsylvania, on the day and year first above written.

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Plymouth Twp., Montgomery County
My Commission Expires March 28, 2017
Member, Pennsylvania Association of Notaries

By: _____
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS – Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Gregory W. Davenport, the undersigned, Assistant Secretary, of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 7th day of April, 2016.

By: _____
Gregory W. Davenport, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

CONTINUATION CERTIFICATE

SAFECO Insurance Company of America , Surety upon

a certain Bond No. 4993104

dated effective June 30, 1987
(MONTH-DAY-YEAR)

on behalf of Southern Company Services, Inc.
(PRINCIPAL)

and in favor of Georgia - Dept. of Natural Resources
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on June 30, 2016
(MONTH-DAY-YEAR)

and ending on June 30, 2017
(MONTH-DAY-YEAR)

Amount of bond $10,000.00

Description of bond Water Well Contractors & Drillers

PROVIDED: That this continuation certificate does not create a new obligation and is executed upon the express condition and provision that the Surety's liability under said bond and this and all Continuation Certificates issued in connection therewith shall not be cumulative and that the said Surety's aggregate liability under said bond and this and all such Continuation Certificates on account of all defaults committed during the period (regardless of the number of years) said bond had been and shall be in force, shall not in any event exceed the amount of said bond as hereinbefore set forth.

Signed and dated on April 07, 2016
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

By _____

D-Ann Kleidosty, Attorney-in-Fact

S-0157/GEEF 11/99

THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 7310252

First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Brooke A. Sharp; Christine Doczy; D-Ann Kleidosty; Gary D. Eklund; Sharon J. Potts; Sylvia M. Ogle; William G. Moody

all of the city of Atlanta, state of GA each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 1st day of April, 2016.

First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

By: _____
David M. Carey, Assistant Secretary

STATE OF PENNSYLVANIA ss
COUNTY OF MONTGOMERY

On this 1st day of April, 2016, before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Plymouth Meeting, Pennsylvania, on the day and year first above written.

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Plymouth Twp., Montgomery County
My Commission Expires March 28, 2017
Member, Pennsylvania Association of Notaries

By: _____
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS – Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Gregory W. Davenport, the undersigned, Assistant Secretary, of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 7th day of April, 2016.

By: _____
Gregory W. Davenport, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

GENERAL PURPOSE RIDER

To be attached to and form part of Bond Number 09157828 effective June 30, 2015 issued by the Fidelity and Deposit Company of Maryland in the amount of Twenty Thousand and No/100 ($20,000.00), on behalf of Craig Penton dba Terracon Consultants, Inc. as Principal, and in favor of Director of the Environmental Protection Division, Department of Natural Resources, State of Georgia as Obligee:

NOW Therefore, it is agreed that:

The expiration date of the bond is hereby amended to:

June 30, 2017

It is further understood and agreed that all other terms and conditions of this bond shall remain unchanged.

This rider is to be effective the 30th day of June , 2015 .

Signed, sealed and dated this 4th day of November , 2015 .

Craig Penton dba Terracon Consultants, Inc.
Principal

_____

Fidelity and Deposit Company of Maryland
Surety

_____

Christy M. Braile, Attorney-in-Fact

6/4/14 sent to Craig Penton (Stacy Adams)

FOR YOUR RECORDS

Bond Number 09157828

Performance Bond For Water Well Contractors And Drillers

Name of Water Well Contractor or Driller Craig Penton dba Terracon Consultants, Inc.

Know All Men By These Present

That we Craig Penton dba Terracon Consultants, Inc. AND ANY AND ALL EMPLOYEES, OFFICERS AND PARTNERS, as Principal, and Fidelity and Deposit Company of Maryland as Surety, are held and firmly bound unto the Director of the Environmental Protection Division (Director), Department of Natural Resources, State of Georgia and his or her Successor or Successors in office, as Obligee, in the full sum of **TWENTY THOUSAND AND NO/00 DOLLARS ($20.000.00)** for the payment of which will and truly to be made, we bind ourselves, our heir, administrators, successors and assigns, jointly and severally, by the present.

WHEREAS, the WATER WELL STANDARDS ACT OF 1985 (Ga. Laws 1985, p. 1192) (the "ACT") requires that water well contractors and drillers file performance bonds with the director to ensure compliance with the ACT; and WHEREAS the above bound PRINCIPAL is subject to the terms and provisions of said ACT. NOW, THEREFORE, the conditions of this obligation are such that if the above bound PRINCIPAL shall fully and faithfully perform the duties and in all things comply with the procedures and standards set forth in the ACT as now and hereafter amended, and the rules and regulations promulgated pursuant thereto, including but not limited to the correction of any violation of such procedures and standards upon discovery, irrespective of whether such discovery is made before completion of any well subject to this bond, then this obligation shall be void; otherwise of full force and effect.

And Surety, for value received, agrees that no amendment to existing laws, rules or regulations, or adoption of new laws, rules or regulations shall in anyway discharge its obligation on this bond, and does hereby waive notice of any such amendment, adoption or modification.

This bond shall be effective from date of issuance and shall continue in effect until terminated by expiration, mutual agreement or cancellation upon sixty (60) days written notice to Principal and Obligee; provided that the rights of the obligee and beneficiaries under this bond which arose prior to such termination shall continue.

The bond is effective June 4, 2014 and unless sooner terminated, this bond shall terminate June 30, 2015. In Witness Thereof the Principal and Surety have caused these present to be duly signed and sealed, this 4th day of, June 2014.

PRINCIPAL, BY_____(L.S.) TITLE: _____

SURETY BY: _____
Christy M. McCart, Attorney-in-Fact

GEORGIA REGISTERED AGENT N/A SEAL:

Revised December 2012

CONTINUATION
CERTIFICATE

SAFECO Insurance Company of America , Surety upon

a certain Bond No. **4993104**

dated effective June 30, 1987
(MONTH-DAY-YEAR)

on behalf of Southern Company Services, Inc.
(PRINCIPAL)

and in favor of Georgia Department of Natural Resources, Environmental Protection Division
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on June 30, 2019
(MONTH-DAY-YEAR)

and ending on June 30, 2020
(MONTH-DAY-YEAR)

Amount of bond Fifteen Thousand Dollars and 00/100 ($15,000.00)

Description of bond Water Well Contractors & Drillers

Premium: $100.00

PROVIDED: That this continuation certificate does not create a new obligation and is executed upon the express condition and provision that the Surety's liability under said bond and this and all Continuation Certificates issued in connection therewith shall not be cumulative and that the said Surety's aggregate liability under said bond and this and all such Continuation Certificates on account of all defaults committed during the period (regardless of the number of years) said bond had been and shall be in force, shall not in any event exceed the amount of said bond as hereinbefore set forth.

Signed and dated on 11/10/2020
(MONTH-DAY-YEAR)
SAFECO Insurance Company of America
175 Berkeley Street, Boston, MA 02116

By
Attorney-in-Fact Jeffrey M. Wilson, Attorney-in-Fact

McGriff, Seibels & Williams, Inc.
Agent
2211 7th Avenue South, Birmingham, AL 35233
Address of Agent
(205) 252-9871
Telephone Number of Agent

S-0157/GE 8/08

XDP

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Liberty Mutual SURETY

American States Insurance Company
First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

Certificate No: **8201221-016032**

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That American States Insurance Company is a corporation duly organized under the laws of the State of Indiana, that First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Anna Childress; Richard H. Mitchell; Sam Audia; Mark W. Edwards, II; Alisa B. Ferris; Robert R. Freel; William M. Smith; Jeffrey M. Wilson

all of the city of Birmingham state of AL each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 8th day of May, 2019.

American States Insurance Company
First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

By: _____
David M. Carey, Assistant Secretary

State of PENNSYLVANIA
County of MONTGOMERY ss

On this 8th day of May, 2019 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By: _____
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS: Section 12. Power of Attorney.
Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorney-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 10th day of November, 2020.

By: _____
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

CONTINUATION
CERTIFICATE

SAFECO Insurance Company of America , Surety upon

a certain Bond No. **4993104**

dated effective June 30, 1987
(MONTH-DAY-YEAR)

on behalf of Southern Company Services, Inc.
(PRINCIPAL)

and in favor of Georgia Department of Natural Resources, Environmental Protection Division
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on June 30, 2020
(MONTH-DAY-YEAR)

and ending on June 30, 2021
(MONTH-DAY-YEAR)

Amount of bond Fifteen Thousand Dollars and 00/100 ($15,000.00)

Description of bond Water Well Contractors & Drillers

Premium: $100.00

PROVIDED: That this continuation certificate does not create a new obligation and is executed upon the express condition and provision that the Surety's liability under said bond and this and all Continuation Certificates issued in connection therewith shall not be cumulative and that the said Surety's aggregate liability under said bond and this and all such Continuation Certificates on account of all defaults committed during the period (regardless of the number of years) said bond had been and shall be in force, shall not in any event exceed the amount of said bond as hereinbefore set forth.

Signed and dated on 11/10/2020
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

175 Berkeley Street, Boston, MA 02116

By
Attorney-in-Fact Jeffrey M. Wilson, Attorney-in-Fact

McGriff, Seibels & Williams, Inc.
Agent

2211 7th Avenue South, Birmingham, AL 35233
Address of Agent

(205) 252-9871
Telephone Number of Agent

S-0157/GE 8/08

XDP

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Liberty Mutual SURETY

American States Insurance Company
First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

Certificate No: **8201221-016032**

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That American States Insurance Company is a corporation duly organized under the laws of the State of Indiana, that First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Anna Childress; Richard H. Mitchell; Sam Audia; Mark W. Edwards, II; Alisa B. Ferris; Robert R. Freel; William M. Smith; Jeffrey M. Wilson

all of the city of Birmingham state of AL each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 8th day of May, 2019.

American States Insurance Company
First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

By: _____
David M. Carey, Assistant Secretary

State of PENNSYLVANIA
County of MONTGOMERY ss

On this 8th day of May, 2019 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By: _____
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS: Section 12. Power of Attorney.
Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorney-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 10th day of November, 2020.

By: _____
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

CONTINUATION CERTIFICATE

SAFECO Insurance Company of America , Surety upon

a certain Bond No. 4993104

dated effective 6/30/1987
(MONTH-DAY-YEAR)

on behalf of Southern Company Services, Inc.
(PRINCIPAL)

and in favor of Georgia Department of Natural Resources, Environmental Protection Division
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on June 30, 2019
(MONTH-DAY-YEAR)

and ending on June 30, 2020
(MONTH-DAY-YEAR)

Amount of bond $15,000.00

Description of bond Water Well Contractors & Drillers

PROVIDED: That this continuation certificate does not create a new obligation and is executed upon the express condition and provision that the Surety's liability under said bond and this and all Continuation Certificates issued in connection therewith shall not be cumulative and that the said Surety's aggregate liability under said bond and this and all such Continuation Certificates on account of all defaults committed during the period (regardless of the number of years) said bond had been and shall be in force, shall not in any event exceed the amount of said bond as hereinbefore set forth.

Signed and dated on June 05, 2019
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

By Loretta M. Jones

Loretta M. Jones, Attorney-in-Fact

S-0157/GEEF 11/99

Liberty Mutual. SURETY

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

American States Insurance Company
First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

Certificate No. 8200528-969358

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That American States Insurance Company is a corporation duly organized under the laws of the State of Indiana, that First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Julie Karnes, Andrea Allman, Rachel A. Chaveriat, Jessica Frederick, Rebecca J. Hobbs, Loretta M. Jones, Sandra King, Thelma M. Lett, Michelle Lute-Heatherly, Sandy McElhaney, Vicki Nobinger, Bonnie Rice, Mariah Smith, Mary Y. Volmar, Carolyn E. Wheeler, Joy M. Williams

all of the city of Knoxville state of TN each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 15th day of February, 2019.

American States Insurance Company
First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

By: _____
David M. Carey, Assistant Secretary

State of PENNSYLVANIA
County of MONTGOMERY ss

On this 15th day of February, 2019 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By: _____
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS: Section 12. Power of Attorney.
Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorney-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 5th day of June, 2019.

By: _____
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

CERTIFIED WELL SURVEY REPORT

METRO ENGINEERING & SURVEYING CO., INC.
SURVEYORS - ENGINEERS - PHOTOGRAMMETRISTS
PROVIDING PROFESSIONAL SERVICE SINCE 1967

1469 HIGHWAY 20 WEST • MCDONOUGH, GA 30253
phone: 770-707-0777 fax: 770.707-0755
WWW.METRO-ENGINEERING.COM

SURVEYOR'S REPORT

SCOPE OF WORK:

Field survey of existing monitoring wells at Georgia Power Company, Plant McDonough in Smyrna, GA.

Horizontal and vertical datum was derived from RTK GPS observations with corrections from the eGPS network and conventional surveying equipment. Horizontal datum is Georgia State Plane, West Zone, NAD83(2011) and vertical datum is NAVD88.

EQUIPMENT USED TO ESTABLISH THE MONITORING WELL LOCATIONS:

Trimble R8 Dual Frequency GPS Receiver
Leica TS16 Total Station
Leica DNA10 Digital Level

CERTIFICATION:

I hereby certify that the center of well casing (PVC) has a horizontal accuracy of 0.5+/- feet or better using a Trimble R8 Dual Frequency RTK (survey-grade) global positioning system receiver referencing the Georgia State Plane, west zone, NAD83(2011) coordinate system in US survey feet. The top of well casing (PVC) elevation data was determined in feet above mean sea level based on the NAVD88 vertical datum. Vertical data was confirmed to be accurate within 0.01 foot through establishment of a closed level check loop with a Leica DNA10 digital level having a published accuracy of 0.9mm per dual-traverse kilometer.

James R. Green R.L.S. No. 2543

Date: 8/10/20

Plant McDonough
Monitoring Well Locations
August 7, 2020

Well ID	LATITUDE	LONGITUDE	NAIL NORTHING	NAIL EASTING	NAIL ELEV	PVC NORTHING	PVC EASTING	TOP PVC ELEV	ELEV AT BASE
B-100	N33.821507	W84.477304	1390255.7	2202241.1	775.32	1390254.8	2202242.1	777.95	775.3
B-16	N33.827948	W84.473793	1392595.3	2203314.4	823.54	1392595.1	2203315.4	826.47	823.6
B-18	N33.827740	W84.475241	1392520.2	2202876.1	823.89	1392521.0	2202875.5	826.56	823.9
B-24	N33.827616	W84.479935	1392479.7	2201451.1	819.19	1392479.9	2201450.0	822.11	819.3
B-25	N33.828532	W84.479765	1392813.0	2201503.9	833.41	1392813.3	2201502.7	836.54	833.5
B-26	N33.829336	W84.479610	1393105.5	2201551.4	850.61	1393105.6	2201550.4	853.60	850.6
B-28	N33.826209	W84.479175	1391968.5	2201678.9	813.28	1391967.4	2201679.2	816.08	813.3
B-29	N33.825994	W84.480021	1391891.0	2201421.4	813.47	1391890.0	2201422.0	816.43	813.5
B-3	N33.831925	W84.476784	1394044.3	2202412.0	834.86	1394045.1	2202411.5	837.78	835.0
B-31	N33.826387	W84.481648	1392034.9	2200928.0	794.84	1392034.3	2200928.5	797.47	794.9
B-41	N33.823333	W84.478925	1390921.5	2201751.1	792.40	1390920.8	2201751.9	795.20	792.4
B-50	N33.825358	W84.478639	1391656.0	2201840.9	806.49	1391657.1	2201841.0	809.67	809.2
B-51	N33.822173	W84.481705	1390500.7	2200905.6	763.29	1390501.2	2200906.5	765.92	763.3
B-52	N33.827143	W84.480378	1392307.3	2201314.3	820.18	1392308.3	2201314.8	822.89	820.3
B-54	N33.832971	W84.474387	1394422.3	2203141.2	782.54	1394423.5	2203140.7	785.46	782.6
B-55	N33.832207	W84.471067	1394142.2	2204146.8	822.86	1394142.6	2204147.9	825.12	822.9
B-56	N33.831700	W84.470934	1393957.6	2204186.8	820.95	1393957.9	2204187.8	823.59	821.0
B-57	N33.824649	W84.475687	1391397.5	2202736.1	786.03	1391396.3	2202736.9	789.04	786.0
B-58	N33.823902	W84.476706	1391126.5	2202426.0	785.20	1391125.7	2202426.5	788.17	785.2
B-59	N33.832766	W84.474846	1394348.1	2203001.5	785.41	1394349.1	2203001.1	788.00	785.5
B-6	N33.832961	W84.473972	1394420.5	2203266.5	786.45	1394419.5	2203266.5	789.47	786.5
B-60	N33.823839	W84.475205	1391101.4	2202882.2	779.25	1391100.7	2202881.6	782.13	779.2
B-61	N33.823442	W84.476443	1390958.4	2202506.9	778.95	1390957.8	2202505.8	782.09	779.0
B-62	N33.820331	W84.478719	N.A.	N.A.	N.A.	1389828.1	2201811.2	760.08	760.4
B-63	N33.823559	W84.474888	1390998.7	2202977.5	777.37	1390999.1	2202978.1	777.10	777.3
B-64	N33.832856	W84.474746	1394382.3	2203030.6	785.98	1394381.9	2203031.3	785.83	786.1
B-65	N33.832862	W84.471389	N.A.	N.A.	N.A.	1394381.2	2204050.8	821.95	822.3
B-66	N33.831427	W84.470638	1393859.2	2204277.7	813.33	1393858.2	2204277.5	815.90	813.3

Plant McDonough
Monitoring Well Locations
August 7, 2020

B-68	N33.824362	W84.482346	1391298.8	2200715.2	759.05	1391298.2	2200714.2	758.68	759.0
B-7	N33.832841	W84.472887	1394375.6	2203596.0	806.04	1394374.6	2203596.1	809.16	806.1
B-76	N33.822783	W84.475614	1390716.5	2202756.0	760.87	1390717.4	2202756.9	760.53	766.5
B-77	N33.823420	W84.475007	1390949.4	2202941.4	777.12	1390948.7	2202942.0	776.86	777.1
B-78	N33.832708	W84.474987	1394327.3	2202958.7	787.79	1394328.2	2202958.2	790.75	788.0
B-79	N33.833068	W84.474116	1394457.8	2203223.6	785.84	1394458.6	2203223.0	788.66	785.9
B-80	N33.832834	W84.473091	1394373.5	2203533.9	801.73	1394372.6	2203533.9	804.47	801.8
B-81	N33.832815	W84.472409	1394365.8	2203741.3	817.64	1394364.9	2203741.1	820.56	817.7
B-82	N33.831129	W84.470701	1393750.1	2204256.8	807.55	1393750.0	2204258.1	810.07	807.5
B-83	N33.822832	W84.475816	1390735.9	2202695.1	777.17	1390735.5	2202695.6	776.98	777.1
B-84	N33.821939	W84.477307	1390411.2	2202242.5	776.52	1390411.9	2202241.9	776.34	776.6
B-85	N33.832998	W84.474407	1394432.8	2203134.8	782.71	1394433.4	2203134.5	782.54	782.7
B-86	N33.833127	W84.474170	1394479.5	2203207.0	784.52	1394480.0	2203206.6	784.29	784.6
B-87	N33.832915	W84.473100	1394400.8	2203531.3	800.32	1394401.9	2203531.3	803.37	800.4
B-88	N33.832914	W84.472419	1394399.9	2203738.1	816.80	1394401.1	2203738.3	820.07	817.0
B-89	N33.832910	W84.471394	1394398.7	2204048.6	822.53	1394398.4	2204049.4	822.36	822.6
B-90	N33.833185	W84.474151	1394500.4	2203212.8	784.16	1394501.0	2203212.6	784.00	784.2
B-91	N33.833036	W84.474442	N.A.	N.A.	N.A.	1394447.1	2203123.9	782.98	783.1
B-92	N33.832887	W84.474761	1394393.2	2203026.4	785.30	1394392.7	2203026.7	785.08	785.3
B-93	N33.832763	W84.475024	1394348.1	2202947.0	789.19	1394348.7	2202946.7	789.07	789.2
B-94	N33.832915	W84.473158	1394400.9	2203513.8	799.12	1394402.0	2203513.7	801.74	799.2
B-95	N33.833233	W84.474299	1394519.5	2203167.2	784.18	1394518.6	2203167.7	784.00	784.3
B-96	N33.833122	W84.474524	1394479.4	2203098.8	785.19	1394478.7	2203099.3	784.92	785.3
B-97	N33.832988	W84.474823	1394430.6	2203008.0	786.50	1394430.0	2203008.3	786.29	786.6
B-98	N33.832883	W84.475066	1394392.7	2202934.6	789.81	1394392.5	2202934.0	789.67	789.8
B-99	N33.833247	W84.474573	1394524.7	2203084.9	782.57	1394524.2	2203084.5	782.39	782.6
DGWA-53	N33.830346	W84.479224	1393473.5	2201667.7	841.37	1393472.8	2201668.8	844.26	841.3
DGWA-70A	N33.822116	W84.482741	1390480.2	2200591.7	805.67	1390481.4	2200591.6	808.52	805.8
DGWA-71	N33.831695	W84.479078	1393964.3	2201714.7	861.22	1393963.3	2201714.8	863.84	861.2
DGWC-8	N33.832699	W84.471944	1394323.0	2203882.3	824.02	1394322.2	2203882.1	826.38	824.1

Plant McDonough
Monitoring Well Locations
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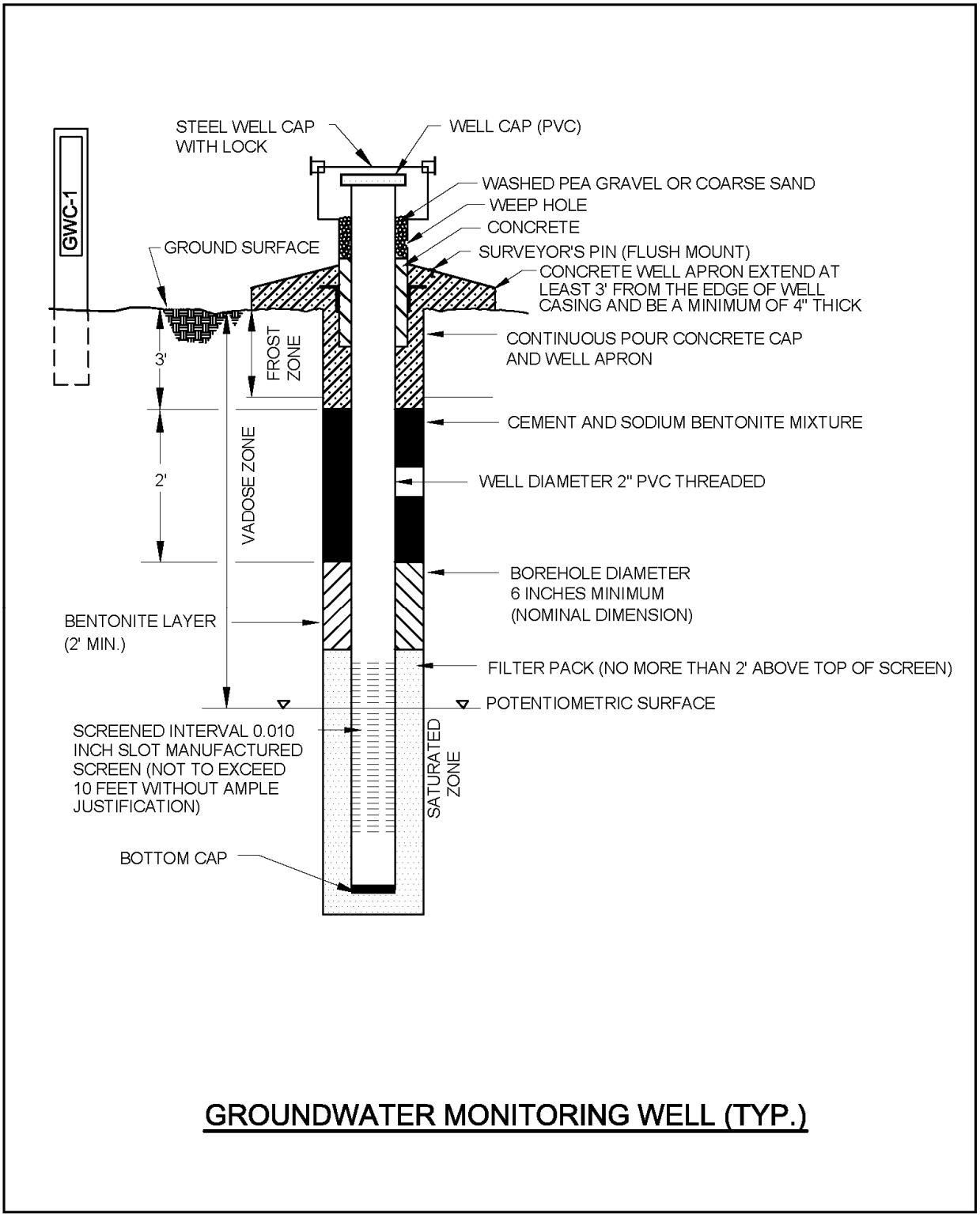
DGWC-37	N33.822121	W84.481661	1390483.0	2200920.7	763.64	1390482.2	2200919.8	766.21	763.7
DGWC-10	N33.831317	W84.470889	1393818.1	2204200.0	820.82	1393818.3	2204201.1	823.55	820.9
DGWC-11	N33.830571	W84.471001	1393546.9	2204167.3	797.99	1393547.1	2204166.2	800.57	798.1
DGWC-12	N33.829478	W84.471122	1393149.8	2204127.3	771.10	1393149.4	2204128.3	773.86	771.2
DGWC-13	N33.828740	W84.471263	1392880.8	2204085.7	791.20	1392881.1	2204084.6	794.10	791.3
DGWC-14	N33.827896	W84.471495	1392574.5	2204014.4	789.69	1392574.2	2204013.3	792.40	789.8
DGWC-15	N33.827810	W84.472595	1392544.2	2203677.9	821.43	1392544.1	2203679.0	824.50	821.5
DGWC-17	N33.828084	W84.474664	1392645.0	2203050.2	834.14	1392645.6	2203051.0	837.05	834.2
DGWC-19	N33.827248	W84.476143	1392341.8	2202601.5	822.87	1392342.6	2202601.0	825.46	822.9
DGWC-2	N33.831683	W84.477745	1393957.1	2202119.4	848.17	1393958.0	2202119.5	850.88	848.3
DGWC-20	N33.826754	W84.477079	1392163.7	2202316.3	819.66	1392164.5	2202315.6	822.14	819.8
DGWC-21	N33.826487	W84.477911	1392066.4	2202063.3	813.47	1392067.5	2202063.5	816.28	813.5
DGWC-22	N33.826647	W84.478805	1392125.2	2201791.7	813.69	1392126.3	2201791.9	816.59	813.7
DGWC-23	N33.826957	W84.479498	1392240.4	2201582.8	815.63	1392239.7	2201582.0	818.37	815.7
DGWC-38	N33.821795	W84.480906	1390363.6	2201149.0	754.67	1390362.7	2201148.6	757.43	754.7
DGWC-39	N33.821635	W84.479616	1390302.5	2201539.8	756.93	1390303.6	2201540.1	759.89	757.0
DGWC-4	N33.832275	W84.475959	1394170.6	2202662.7	812.06	1394171.5	2202662.4	814.85	812.1
DGWC-40	N33.822523	W84.478678	1390625.1	2201826.7	776.12	1390625.7	2201825.9	779.06	776.2
DGWC-42	N33.824453	W84.478540	1391327.4	2201869.1	801.98	1391327.8	2201870.2	804.68	802.0
DGWC-47	N33.825080	W84.476104	1391553.1	2202611.3	794.35	1391553.8	2202610.5	797.45	794.3
DGWC-48	N33.824420	W84.477157	1391314.2	2202289.2	785.21	1391314.6	2202290.2	788.33	785.2
DGWC-5	N33.832647	W84.474964	1394305.3	2202965.3	788.64	1394306.3	2202965.1	791.75	788.7
DGWC-67	N33.823417	W84.481959	1390953.6	2200830.0	766.80	1390953.8	2200830.7	766.70	767.0
DGWC-68A	N33.824370	W84.482278	1391300.9	2200733.4	765.06	1391301.2	2200734.9	765.33	765.4
DGWC-69	N33.825150	W84.482537	1391583.9	2200657.2	763.99	1391585.0	2200657.1	763.75	764.0
DGWC-9	N33.831969	W84.470993	1394055.6	2204168.9	821.86	1394055.9	2204170.0	824.35	821.8

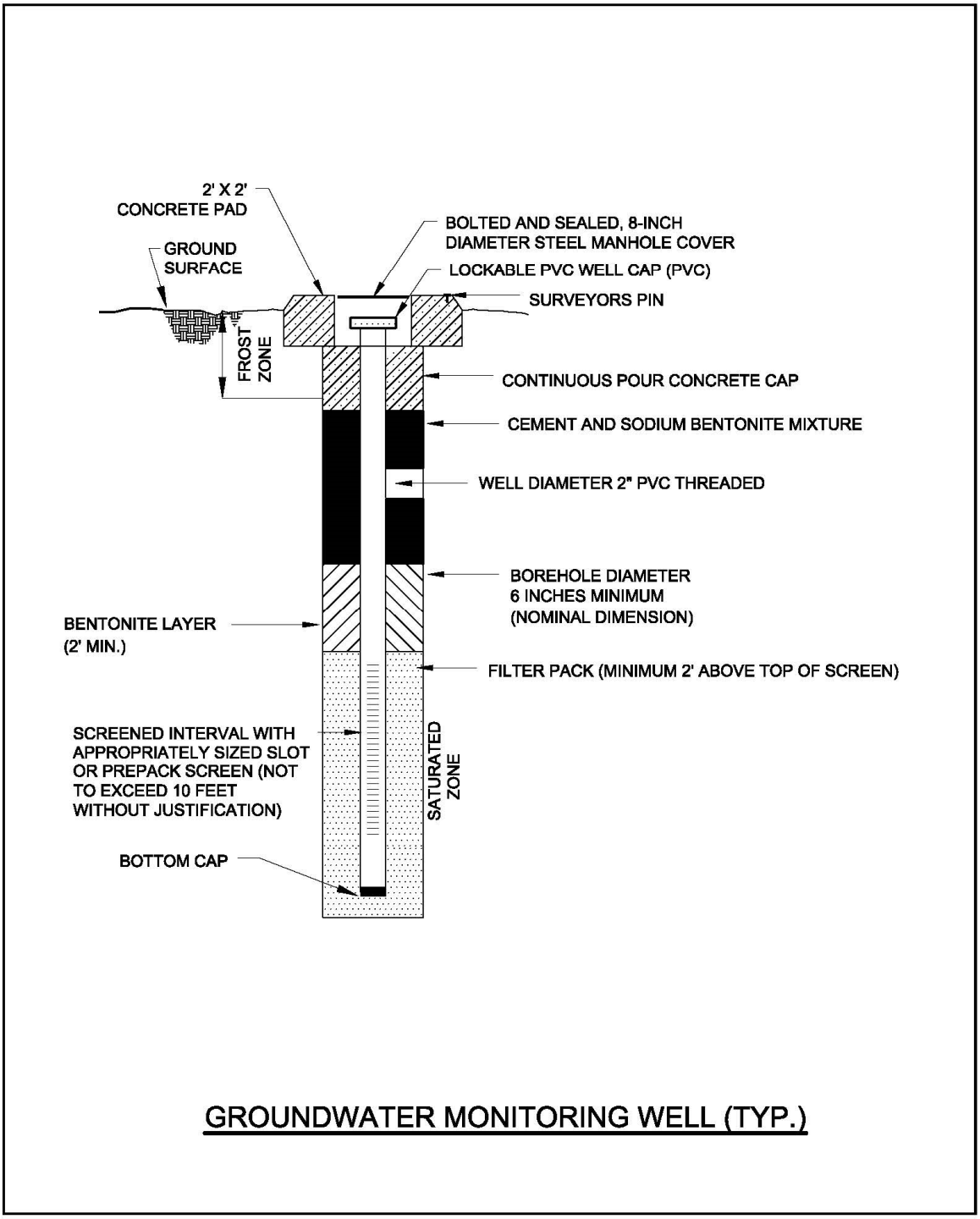
APPENDIX B

GROUNDWATER MONITORING WELL DETAIL

APPENDIX B. GROUNDWATER MONITOIRNG WELL DETAIL



APPENDIX B. GROUNDWATER MONITORING WELL DETAIL-FLUSH MOUNT WELL



GROUNDWATER MONITORING WELL (TYP.)

APPENDIX C

GROUNDWATER SAMPLING PROCEDURES

APPENDIX C. GROUNDWATER SAMPLING PROCEDURES

Groundwater sampling will be conducted using USEPA Region 4 Field Quality and Technical Procedures as a guide. The following procedures describe the general methods associated with groundwater sampling at the site. Prior to sampling, the well must be evacuated (purged) to ensure that representative groundwater is obtained. To accomplish this objective, low-flow purging from the screened interval is recommended until target parameters listed below are stabilized and then, representative groundwater flowing from the geologic formation is collected. Any item coming in contact with the inside of the well casing or the well water will be kept in a clean container and handled only with gloved hands. Field log books and forms shall be kept for each sampling event, and should include, but not be limited to, the following: well signage, well access, sampling and purging equipment condition, and any site conditions that may affect sampling.

The sampling team will follow the procedures below at each well to ensure that a representative sample is collected:

1) Check the well, the lock, and the locking cap for damage or evidence of tampering. Record observations and notify Georgia Power if it appears that the well has been compromised.

2) Measure and record the depth to water in all wells to be sampled prior to purging. Static water levels will be measured from each well, within a 24-hour period. The water level monitoring device will consist of a probe and measuring tape capable of measuring water levels with accuracy to 0.01 feet.

3) Install Pump: If a dedicated pump is not present, slowly lower the pump into the well to the midpoint of the well screen or a depth otherwise approved by the hydrogeologist or project scientist. The pump intake must be kept at least two (2) feet above the bottom of the well to prevent disturbance and suspension of any sediment present in the bottom of the well. Record the depth to which the pump is lowered. Non-dedicated pumps and wiring will be decontaminated before use and between well locations using procedures described in the latest version of the Region 4 U.S. Environmental Protection Agency Science and Ecosystem Support Division (SESD) Operating Procedure for Field Equipment Cleaning and Decontamination as a guide.

4) Measure Water Level: Immediately prior to purging, measure the water level again with the pump in the well. Leave the water level measuring device in the well.

5) Purge Well: Begin pumping the well at approximately 100 to 500 milliliters per minute (ml/min). Monitor the water level continually. Maintain a steady flow rate that results in a stabilized water level with 0.3 ft. or less of variability. Avoid entraining air in the tubing. Record each adjustment made to the pumping rate and the water level measured immediately after each adjustment. A brief overview of the purging and sampling methodologies, including the type of sampling equipment used will be provided in routine monitoring reports.

6) Monitor Indicator Parameters: Monitor and record the field indicator parameters (turbidity, temperature, specific conductance, pH, ORP, and DO) approximately every three to five minutes. The well is considered stabilized and ready for sample collection when the indicator parameters have stabilized for three consecutive readings at a minimum:

   - ±0.1 S.U. for pH
   - ±5% for specific conductance (conductivity)
   - ±10% for DO where DO>0.5mg/L. If DO<0.5mg/L no stabilization criteria apply
   - ≤10 NTUs for turbidity

- Temperature – Record only, not used for stabilization criteria
- ORP – Record only, not used for stabilization criteria

Calibration of field instruments will occur daily and follow the recommended (specific) instrument calibration procedures provided by the manufacturer and/or equipment manual specific to each instrument. Daily calibration will be documented on field forms and these field forms will be included in each groundwater monitoring report.

7) Collect samples at a flow rate between 50 and 250 ml/min and such that drawdown of the water level within the well is stable. Flow rate must be reduced if excessive drawdown is observed during sampling. Sample containers should be filled with minimal turbulence by allowing the groundwater to flow from the tubing gently down the inside of the container.

8) Compliance samples will be unfiltered; however, to determine if turbidity is affecting sample results, duplicate samples may be filtered in the field prior to being placed in a sample container, clearly marked as filtered and preserved. Filtering will be accomplished by the use of 0.45-micron filters on the sampling line. At least two filter volumes of sample will pass through before filling sample containers. Filtered samples are not considered compliance samples and are only used to evaluate the effects of turbidity.

9) Sample bottles will be filled, capped, and placed in an ice containing cooler immediately after sampling where temperature control is required. Samples that do not require temperature control will be placed in a clean and secure container.

10) Sample containers and preservative will be appropriate for the analytical method being used.

11) Information contained on sample container labels will include:
    a) Name of facility
    b) Date and time of sampling
    c) Sample description (well number)
    d) Sampler's initials
    e) Preservatives
    f) Analytical method(s)

12) After samples are collected, samplers will remove non-dedicated equipment. Upon completion of field activity the well will be closed and locked.

13) Non-dedicated equipment will be decontaminated between wells in general accordance with USEPASESDPROC-205-R3 (USEPA, 2015).

14) Samples will be delivered to the laboratory following appropriate chain-of-custody (COC) and temperature control requirements. The goal for sample delivery will be within 48 hours of collection; however, at no time will samples be analyzed after the method-prescribed hold time.

Throughout the sampling process new nitrile gloves will be worn by the sampling personnel. A clean pair of new, disposable gloves will be worn each time a different location is sampled and new gloves donned prior to filling sample bottles. Gloves will be discarded after sampling each well and before sampling the next well.

The goal when sampling is to attain a turbidity of less than 5 NTUs however, samples may be collected where turbidity is less than 10 NTUs and the stabilization criteria described above are met.

If sample turbidity is greater than 5 NTUs and other stabilization criteria have been met, samplers will continue purging for 3 additional hours in order to reduce the turbidity to 5 NTUs or less.

- If turbidity remains above 5 NTUs but is less than 10 NTUs, and other parameters are stabilized, the well can be sampled.
- Where turbidity remains above 10 NTUs, an unfiltered sample will be collected followed by a filtered sample that has passed through an in-line 0.45-micron filter attached to the discharge (sample collection) tube. Data from filtered samples will only be used to quantify the effects of turbidity on sample results.

Samplers will identify the sample bottle as containing a filtered sample on the sample bottle label and on COC form.

WELL INSPECTION FORM
PLANT MCDONOUGH

WELL ID	POSITION	LOCATION / IDENTIFICATION	PROTECTIVE CASING	SURFACE PAD	INTERNAL CASING	SAMPLING (Groundwater Wells Only)
		a. Is the well visible and accessible? b. Is the well property identified/Correct Well ID? c. Is the well in high traffic area require traffic Protection? d. Is the drainage around the well acceptable (No standing water)? (Y / N / NA)	a. Is protective casing free from damage/ b. Is casing free of degradation or deterioration/ c. Does casing have functioning weep hole? d. Is the annual space clear of debirs and water, or filled with pea gravel? e. Is the well locked and in good condition? (Y / N / NA)	a. Pad in Good Condition b. Pad Sloped away from Well? c. In contact with Protective Casing? d. In Contact with Ground Surface and Stable? e. Free of Debris? (Y / N / NA)	a. Does the cap prevent entry of foreign material? b. Is the casing free of kinks or bends or any obstruction from foreigh objects? c. Is the well property vented for equilibrium of air pressure? d. Is the survey point clearly marked on the inner casing? e. Is the depth of the well consistent with the well log? f. Is the casing stable? (Y / N / NA)	a. Does well recharge adequately when purged? b. If dedicated sampling equipment installed, is it in good condition and specified in the approved groundater plan for the facility? c. Does the well require redevelopment? (Y / N / NA)
	↑ or ↓					

NOTES:
1. Provide pictures of any deficiencies.
2. Notify SCS /GPC of any noted deficiencies.
3. Provide additional comments as necessary to address any deficiencies.

INSPECTOR/DATE _____