GROUNDWATER MONITORING PLAN

PLANT BRANCH CCR LANDFILL

PUTNAM COUNTY, GEORGIA

FOR

Georgia Power

SEPTEMBER 2023
REV. 1

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Approved
Solid Waste Management Program

Approved By: Mark Wescott P.G. Digitally signed by Mark Wescott P.G. Date: 2024.01.19 12:38:54 -05'00'

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I. CERTIFICATION

This *Groundwater Monitoring Plan, Georgia Power Company - Plant Branch CCR Landfill* has been prepared by, or under the direct supervision of, a Qualified Groundwater Scientist and a registered professional engineer with Geosyntec Consultants, Inc. (Geosyntec) to meet the requirements contained in Chapter 391-3-4-.10 of the Georgia Environmental Protection Division Rules of Georgia, Solid Waste Management, Coal Combustion Residuals (i.e., State CCR Rule) as well as the United States Environmental Protection Agency Coal Combustion Residuals Rule (40 CFR §257), Part 90. References to the appropriate sections of the State CCR Rule are incorporated throughout this document.

I hereby certify that this Groundwater Monitoring Plan was prepared by, or under the direct supervision of, a Qualified Groundwater Scientist and a Registered Professional Engineer in accordance with the State of Georgia Rules of Solid Waste Management. According to 391-3-4-.01(57), a Qualified Groundwater Scientist 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 individuals to make sound professional judgments regarding groundwater monitoring, contaminant fate and transport, and corrective action." The design of the groundwater monitoring system was developed in compliance with Georgia Environmental Protection Division Rules of Solid Waste Management, Chapter 391-3-4.10(6).

Signature: _____

Date: 9/22/23

JOSEPH M. IVANOWSKI * GEORGIA REGISTERED PROFESSIONAL GEOLOGIST * No. 002140

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GEORGIA REGISTERED No. 034184 PROFESSIONAL ENGINEER MEHMET ISCIMEN

1. INTRODUCTION

Groundwater monitoring is required for CCR units by the Georgia Environmental Protection Division (GA EPD) to detect and quantify potential changes in groundwater chemistry. This Groundwater Monitoring Plan (plan) describes the groundwater monitoring program for the proposed CCR Landfill at Georgia Power Company's (GPC's) Plant Branch (Plant). This plan meets the requirements of GA EPD rules and uses GA EPD's Manual for Ground Water Monitoring dated September 1991 as a guide. Groundwater monitoring well locations are presented on **Figures A-1** and **A-2** of **Appendix A**.

Groundwater 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 GA EPD rules (391-3-4), the GA EPD rules will take precedent.

In accordance with the United States Environmental Protection Agency (USEPA) Coal Combustion Residuals Rule (40 CFR §257), Part 90, which is incorporated by GA EPD CCR Rule (Solid Waste Rule 391-3-4.10) by reference, a detection monitoring well network will be installed at the proposed CCR Landfill. The design and installation of a detection monitoring well network for the Plant Branch CCR Landfill will be certified by a registered professional engineer as well as a qualified groundwater scientist. This plan documents the methods for future monitoring well installation and/or replacement, and procedures for well abandonment. As required by 391-3-4.10(6)(g), a minor modification will be submitted to the GA EPD prior to the unscheduled installation or abandonment of monitoring wells. Well installation and/or abandonment will be directed by a qualified groundwater scientist.

2. GEOLOGIC AND HYDROGEOLOGIC CONDITIONS

The following section summarizes the geologic and hydrogeologic conditions for the Site as described in the *Site Acceptability Report for Proposed CCR Landfill (SAR)* (Geosyntec, 2019) prepared on behalf of GPC. The SAR was submitted under separate cover from this permit application.

2.1 SITE GEOLOGY

Plant Branch is located in the Piedmont physiographic province, which lies between the Blue Ridge Mountains to the northwest and the Upper Coastal Plain to the south. This province is underlain by regionally metamorphosed rocks including granitic gneisses, amphibolite, and mica schists. Physical and chemical weathering of metamorphic and igneous rocks in the humid climate of the southern Piedmont resulted in a variably thick blanket of residual soils and saprolite above the bedrock. The Site is situated in a region underlain by high-grade metasedimentary and metavolcanic rocks of the Carolina Terrane. These rocks are locally intruded by igneous dikes and sills. The metamorphic rocks are generally poorly jointed, while the igneous intrusions are well-jointed.

Geologic mapping performed at the Site by Petrologic Solutions, Inc. (Golder, 2018) indicates that the Site is underlain by a biotite gneiss formation, with the exception of a small portion on the northwest edge of the Site which is underlain by a diabase dike. A geologic map from the Golder 2018 report is included in **Appendix A** as **Figure A-4**. Based on review of subsurface investigations at the Site, the proposed CCR Landfill is underlain primarily by three lithologic units: (i) regolith, (ii) partially weathered rock (PWR), and (iii) biotite gneiss bedrock.

The regolith unit is comprised of shallow clayey residual soils and sandy clay to clayey sand saprolite. The residual soil/saprolite regolith varies in thickness from 10 feet to 75 feet. The observed saprolite thickness is consistent with other Piedmont areas in the southeastern United States. The saprolite is thicker in upland areas, and generally thinner in lowland areas. With depth, the saprolite transitions to PWR, which accounts for a majority of the “transition zone” that lies between the saprolite and the competent bedrock. The thickness of the transition zone, consisting of PWR and upper fractured bedrock, varies considerably across the Site from approximately 5 feet to more than 70 feet, with the PWR making up the greatest part of the thickness. Competent bedrock at the Site is primarily characterized as poorly to moderately fractured with low (<30°) fracture dip angles. The competent bedrock consists of biotite gneiss occasionally interlayered with amphibolite with few open fractures. The unweathered rocks are well foliated with a planar, northeast-trending fabric, showing distinct dark and light banding, feldspar phenocrysts, quartz and feldspar augen, and few micro-fold structures. The gneissic rocks show moderate to high-grade metamorphism, as indicated by the presence of migmatitic texture noted in some samples.

2.2 SITE HYDROGEOLOGY

The uppermost aquifer at the Site is an unconfined regional groundwater aquifer that occurs primarily in the regolith and within the PWR and upper fractured bedrock. Generally, the water table surface at the Site is a subdued reflection of topography. At the Plant scale, groundwater generally flows in an easterly direction from the higher ridges located west of the proposed CCR landfill. At the Site scale, groundwater flow is in three directions, flowing away from the crest of the ridge at the center of the Site to the northeast, southwest, and to the northwest. Localized groundwater flow directions are naturally influenced by variations in topography and the top of bedrock surface. Current groundwater flow

directions at the Site are also influenced by the existence of adjacent ash ponds, namely Ash Ponds C and D in the southeast portion of the Site.

Recharge to the bedrock aquifer system comes primarily from water stored in the regolith. The regolith soil allows for slow infiltration to the bedrock through areas of enhanced permeability. The rate of this infiltration is generally considered to be slow, as the silty, clayey-rich sandy soils present across most of the Site retard recharge from the uppermost aquifer into the underlying bedrock aquifer system. The few open fractures present in the gneiss bedrock are the only pathway for groundwater flow through bedrock, since the rock lacks primary porosity.

A potentiometric surface map was generated from water level measurements collected on April 14, 2022 and is presented in **Figure A-3** of **Appendix A**. Because of its higher elevation, the April 14, 2022 potentiometric surface was selected as the basis for the groundwater network design, since it provides a more conservative basis for the monitoring network than the January 2019 potentiometric surface. Depths to groundwater vary considerably across the Site from approximately 30 feet to as much as 50 feet in the higher topographic elevations and to as little as two feet at the toe of the Pond D dike, nearest the shoreline of Lake Sinclair. Groundwater flow is generally away from the topographic high near the center of the Site and Ash Pond D toward Lake Sinclair or its tributaries.

The representative groundwater hydraulic gradient for the Site, based on April 2022 water level data, was calculated using two pairs of wells (PZ-23I/PB-13D and PZ-23I/BRGWC-30I). The gradients between these locations were estimated to be 0.015 feet/foot (ft/ft), and 0.028 ft/ft, respectively. An effective porosity of 0.19 (from ATC, 2000) was used to represent average site porosity conditions. The geometric mean horizontal hydraulic conductivity (k_h) based on slug test data collected at the Site for the regolith, regolith/PWR, and PWR/bedrock units combined (1.09 ft/day) was used to represent typical site conditions.

The groundwater flow velocity calculations were performed using a k_h of 1.09 ft/day, each of the two gradients presented above, and a typical effective porosity of 0.19. These calculations yielded two flow velocities of 0.09 ft/day and 0.16 ft/day, with an average groundwater flow velocity of 0.13 ft/day for typical Site conditions.

It should be noted that the dewatering and removal of CCR from the onsite ash ponds will likely result in transient and locally dynamic groundwater flow conditions at the Site. As additional data and information are collected during design and construction of the pond closures, the estimated transient and post-closure groundwater conditions may be re-evaluated and refined with respect to the proposed CCR landfill design.

3. SELECTION OF WELL LOCATIONS

Groundwater monitoring wells will be installed to monitor the uppermost aquifer beneath the Site. Well locations are selected based on the proposed CCR landfill footprint, phasing of construction and waste placement, and geologic and hydrogeologic considerations. Well spacings at the proposed landfill were based on site-specific conditions such as an engineered landfill liner and cover system, typical Piedmont hydrogeology (i.e. no complex faulting or karst conditions), similar lithologic units and hydraulic conductivity and gradients within the Site, no discrete preferential flow pathways, no expected point source leakage, and a waste that is compatible with the liner. Maps depicting the proposed monitoring well network for the CCR landfill are included in **Figures A-1** and **A-2 of Appendix A**, Monitoring System Details. The potentiometric surface map in **Figure A-3** of **Appendix A** depicts the groundwater surface in the vicinity of the Site based on April 2022 observations. A more detailed discussion of the hydrogeological conditions at the Site with respect to monitoring well placement is provided in the SAR (Geosyntec, 2019).

Monitoring Well Network Phasing

Construction of the proposed CCR landfill cells, underdrain, and subsequent placement of the CCR in the cells, will take place in phases over the course of several years. For the purpose of establishing the groundwater monitoring network, cell construction has been grouped into two primary construction phases (Phase 1 and Phase 2). The initial phase (Phase 1) consists of the construction of the dikes along the western half of the landfill footprint, the construction and lining of Cells 1, 2, 3, 4, 5 and 6, and the construction of two stormwater/contact water ponds. This Phase 1 area is shown in **Figure A-1**. During this phase, CCR material from Ash Pond D as well as the other ash ponds will be removed and placed into these cells of the CCR landfill. In order to provide appropriate monitoring locations for the areas included in Phase 1, sixteen (16) groundwater monitoring wells have been installed in November 2022 prior to the construction of the dikes and placement of the CCR material in Cells 1 through 6. These locations are shown as Phase 1 monitoring wells in **Figure A-1**. Furthermore, these monitoring wells will be sampled prior to ash placement for background monitoring in compliance with 40 CFR §257.94(b).

Following removal of the CCR material from Ash Pond D entirely, the remaining perimeter dikes (eastern portion) of the landfill, Cells 7-10, the underdrain beneath former Ash Pond D, and an additional stormwater retention pond at the southeastern corner of the facility will be constructed, which is referred to as Phase 2 for the scope of this plan. The Phase 2 area is shown in **Figure A-2**. Nine (9) additional monitoring wells will be installed at the locations shown on **Figure A-2** providing coverage for the new cells associated with Phase 2. The underdrain is intended to collect groundwater from beneath a portion of the landfill (beneath Cells 9 and 10), which will then be managed under the appropriate NPDES permit.

Three (3) existing wells (BRGWA-2S, BRGWA-5S, and BRGWA-6) are designated for monitoring of upgradient or background conditions. These wells are currently used for monitoring upgradient conditions at Ash Pond E. In addition, two (2) existing wells (PZ-54 and PZ-55) in topographically high areas to the west of the CCR landfill as shown in **Figures A-1** and **A-2**, are considered for possible use for the monitoring network. Based on their position in relation to Ash Pond E and potentially changing groundwater conditions after removal of CCR from the ash ponds, these two wells will be evaluated upon sample collection to determine their appropriateness for inclusion in the background well network. Eight (8) background monitoring events will be completed prior to placement of the CCR, which allows for background conditions be evaluated prior to and during construction of the CCR landfill to ensure that

suitable representative samples of groundwater are being collected and that changing groundwater flow dynamics are accounted for.

All monitoring wells will be positioned to provide adequate coverage to detect potential impacts from the proposed CCR landfill. Both upgradient and downgradient wells will be screened in the uppermost aquifer, in the residuum, partially weathered rock, and/or upper fractured bedrock. Monitoring wells will be generally located outside of areas with frequent auto traffic; however, wells may be installed in heavily trafficked areas with protective measures (e.g., flush mount with traffic-rated vaults) when necessary to meet the groundwater monitoring objectives of the GA EPD rules. In addition to the potentiometric surface map, **Appendix A** also includes a tabulated list (**Table A-1**) of location coordinates for the individual monitoring wells. Additional well construction details (i.e., top-of-casing elevation, well depths and screened intervals) will be provided upon installation.

4. MONITORING WELL DRILLING, CONSTRUCTION, ABANDONMENT AND REPORTING

The monitoring wells to be included in this monitoring network will be installed following USEPA Region 4 Science and Ecosystem Support Division (SESD) *Operating Procedure for Design and Installation of Monitoring Wells* (USEPA, SESDGUID-101-R2) as a general guide for best practices. Monitoring wells will be installed in accordance with the following procedures.

4.1 DRILLING

A variety of well drilling methods are available for the purpose of installing groundwater monitoring wells. Drilling methodologies include but are not limited to: hollow stem augers, direct push, air rotary, mud rotary, and rotosonic techniques. The drilling method will be selected to minimize the disturbance of subsurface materials and not cause impacts to groundwater. Borings will be advanced using an appropriate drilling technology capable of drilling and installing a well in the site-specific geology. Monitoring wells will be installed using the most current version of the USEPA SESD SESDGUID-101-R2 as a general guide for best practices. Also, drilling equipment will be decontaminated before use and between borehole locations using the procedures described in the most current version of USEPA Laboratory Services and Applied Science Division *Field Equipment Cleaning and Decontamination* (LSASDPROC-205-R4). Well installation will be directed by a Qualified Groundwater Scientist.

Sampling and/or coring may be used to help determine the stratigraphy and geology at the well location. Samples and cores will be logged by a Qualified Groundwater Scientist. Screen depths will be chosen based on the depth to the uppermost aquifer.

All drilling for any subsurface hydrogeologic investigation, or for installation or abandonment of groundwater monitoring wells, will be performed by a driller that has, at the time of installation, a performance bond on file with the Water Well Standards Advisory Council. Standards for surveying and reporting of coordinates and elevation for monitoring wells is discussed in section 4.4.

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.

<u>WELL CASINGS AND SCREENS</u>

American Society for Testing and Materials (ASTM), National Science Foundation (NSF) rated, Schedule 40, 2-inch diameter 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 GA EPD.

WELL INTAKE DESIGN

Intake for groundwater monitoring wells will be designed and constructed to: (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 will not exceed 10 feet without justification as to why a different screen length is necessary (e.g., significant variation in groundwater level). If these specifications 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.

Pre-packed dual-wall well screens will be the preferred screen-type 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 current version of USEPA SESDGUID-101-R2 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.

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 boring 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 elevation of filter pack depth will be monitored, and additional sand added if necessary. The filter pack will extend a minimum of two feet above the top of the well screen.

The materials used to seal the annular space in the boring above the well pack 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 cementitious grout from entering the water-bearing or screened zones. If dry bentonite is used, the bentonite must be hydrated with potable water prior to grouting the remaining annulus. The bentonite seal will be allowed to hydrate for at least eight hours or the manufacturer's recommended hydration time, whichever is greater.

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 two feet above the

bentonite seal and injecting grout at low pressure/velocity. The grout will be allowed to cure for at least 24 hours prior to well completion.

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 cementitious grout to ground surface, where it will become a concrete apron extending outward with a radius of at least 2 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 air pressure in the well to equalize with atmospheric pressure. The cap will be locked in flush mount wells. In wells with above-ground protection, the space between the well casing and the protective casing will 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 will 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.

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 5 nephelometric turbidity units (NTUs); however, formation-specific conditions may not allow this target to be accomplished. Generally, the well will be considered properly developed once a turbidity of less than 10 NTU is achieved. Additionally, the stabilization criteria contained in **Appendix C** 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. All 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 two times the volume of water added will be purged from the well.

The geologic formations underlying the Site contain clay and silt particles that are small enough to work their way through a well's filter pack over time. Therefore, the turbidity of the groundwater from the monitoring wells may gradually increase over time after initial well development. As a result, monitoring wells may need to be redeveloped periodically to remove the silt and clay that has worked its way into the filter packs of the 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.

Well development will be conducted under supervision of a certified groundwater professional and well development data will be provided as part of well installation report.

4.3 ABANDONMENT

In accordance with 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 registered to practice in the State of Georgia using industry-accepted practices, the GA EPD Manual for Groundwater Monitoring (1991), and Georgia's Well Water Standards Act of 1985 [Official Code of Georgia Annotated (O.C.G.A.) § 12-5-120, 1985] as guides. Neat Portland cement or bentonite will be used as appropriate to complete abandonment and seal the well borehole. Any piezometers or groundwater wells currently located within the footprint of the proposed CCR landfill will be over-drilled prior to abandonment. A well abandonment report will be submitted to GA EPD within 60 days of completion of well abandonment.

4.4 DOCUMENTATION

The following information documenting the construction, development, and abandonment of each new groundwater well for the CCR landfill will be certified by a Qualified Groundwater Scientist (certified Professional Engineer or Professional Geologist) and submitted to GA EPD within 60 days after completing all planned well installations:

- Well identification
- Name of drilling contractor and type of drill rig
- Documentation that the driller, at the time the monitoring wells were installed, had a bond on file with the Water Well Advisory Council
- Narrative of drilling technique applied, well construction details, and well development procedures, including drilling dates, drilling fluids used (if applicable), well casing and screen materials, screen slot size, and joint type
- Details of filter pack material/size, emplacement method (narrative), and volume
- Seal emplacement method and type/volume of sealant
- Borehole diameter and well casing diameter
- Type of protective well cap and sump dimensions
- Surface seal and volumes/mix of annular seal material
- Screen length and interval reported in feet below ground surface and elevation
- Schematic of the well dimensions for all components (e.g., casing, screen, sump, well pad)
- Well location given to within an accuracy of 0.5 feet based upon survey from acceptable survey point datum by a Georgia-registered professional surveyor
- Vertical elevations given to within an accuracy of 0.01 feet based upon survey from acceptable survey point datum by a Georgia-registered professional surveyor
- Location and vertical elevations will be referenced to Georgia State Plane Coordinate System (Georgia State Plane, West Zone, NAD83) and vertical datum North American Vertical Datum 1988 (NAVD88), respectively.
- Lithologic logs

- Narrative of well development method and documentation that water quality field parameters meet well development criteria (Section 4.2); as well as the specific procedures used and date of well development
- Well turbidity following development
- Documentation of ground surface elevation (±0.01 feet)
- Documentation of top of casing elevation (±0.01 feet)

In accordance with the Georgia Water Well Standards Act (O.C.G.A §12-5-120), at least once every five years, the owner of the property on which a monitoring well is constructed shall have the monitoring well(s) inspected by a professional engineer or professional geologist, who shall direct appropriate remedial corrective work to be performed if the well does not conform to standards. Well inspection records and records of remedial corrective work are subject to review by GA EPD. Additionally, the cost estimate based upon current year cost for the well inspections will be provided as part of the cost calculations for the groundwater monitoring period.

5. 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 new 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. Existing background wells (BRGWA-2S, BRGWA-5S, and BRGWA-6) will have historical monitoring data for consideration. Subsequently, in accordance with 391-3-4-.10(6), the monitoring frequency for the Appendix III parameters will be at least semi-annual during CCR landfill operations, closure, and post-closure care period.

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 Methods, the groundwater samples will be analyzed using methods specified in EPA Manual SW-846, EPA 600/4-79-020, Standard Methods for the Examination of Water and Wastewater (SM18-20), EPA Methods for the Chemical Analysis of Water and Wastes (MCAWW), ASTM, or other suitable analytical methods approved by GA EPD. The method used will be able to reach a suitable practical quantification limit to detect natural background conditions at the facility. The groundwater samples will be analyzed by licensed and accredited laboratories through the National Environmental Laboratory Accreditation Conference (NELAC). 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
	ORP	X	X
	Turbidity	X	X
	Specific Conductance	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	USEPA Method Number
Boron	6010B/6020B
Calcium	6010B/6020B
Chloride	300.0/300.1/9250/9251/9253/9056A
Fluoride	300.0/300.1/9214/9056A
pH	150.1 field
Sulfate	9035/9036/9038/300.0/300.1/9056A
Total Dissolved Solids (TDS)	160/2540C
Antimony	EPA 7040/7041/6010B/6020B
Arsenic	EPA 7060A/7061A/6010B/6020B
Barium	EPA 7080A/7081/6010B/6020B
Beryllium	EPA 7090/7091/6010B/6020B
Cadmium	EPA 7130/7131A/6020B
Chromium	EPA 7190/7191/6010B/6020B
Cobalt	EPA 7200/7201/6010B/6020B
Fluoride	300.0/300.1/9214/9056A
Lead	EPA 7420/7421/6010B/6020B
Lithium	6010/6020B
Mercury	7470
Molybdenum	6010/6020B
Selenium	EPA 7740/7741A/6010B/6020B
Thallium	EPA 7840/7841/6010/6020B
Radium 226 and 228 combined	EPA 903/9320/9315

6. SAMPLE COLLECTION

During each sampling event, groundwater samples will be collected and handled in accordance with the procedures specified in **Appendix C**, Groundwater Sampling Procedure. 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 GA EPD approval. The applied groundwater purging and sampling methodologies will be discussed in the groundwater semi-annual monitoring reports submitted to GA EPD. Water from the underdrain sump will be collected and managed under the appropriate NPDES permit, therefore, sampling at the underdrain pipe will not be conducted.

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.

Per Georgia Rule 391-3-4-.10(6)(g) monitoring wells require replacement after two consecutive dry sampling events. Well installation must be directed by a qualified groundwater scientist. A minor modification will be submitted in accordance with Rule 391-3-4-.02 prior to the installation or decommissioning of monitoring wells.

7. CHAIN-OF-CUSTODY

All 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
- Notated date(s) and time(s) of sample transfer between individuals

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

8. FIELD QUALITY ASSURANCE / QUALITY CONTROL

All field quality control samples will be prepared the same as compliance samples with regard 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 10 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 10 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 10 samples.

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

The groundwater quality field meter(s) used during a sampling event will be calibrated in a manner consistent with the manufacturer's specifications before sampling activities commence and at the start of each day during which groundwater samples will be collected (i.e., a field day). The calibration data will be recorded on the appropriate field form. Instruments will be recalibrated as necessary (e.g., when calibration checks indicate significant variability), and all checks and recalibration steps will be documented on field calibration forms. Calibration of the instruments will also be checked if any readings during sampling activities are suspect. Replacement probes and meters will be obtained as a corrective action in the event that recalibration does not improve instrument function. Calibration field forms will be included in all groundwater monitoring reports.

9. REPORTING RESULTS

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

1. A summary of the site's history and monitoring system status.
2. A brief discussion of the geology/hydrogeology of the site.
3. Groundwater monitoring compliance status.
4. 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.
5. A brief overview of purging/sampling methodologies.
6. Comparison to established standards.
7. Discussion of results.
8. Recommendations for the future monitoring consistent with the Rules.
9. Potentiometric surface contour map for the aquifer(s) being monitored, signed and sealed by a Georgia-registered P.G. or P.E.
10. 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.
11. Groundwater flow rate and direction calculations.
12. Identification of any groundwater wells that were installed or abandoned during the preceding year, along with a narrative description of why these actions were taken.
13. 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).
14. If applicable, semi-annual assessment monitoring results.
15. Any alternate source demonstration completed during the previous monitoring period, if applicable.
16. Laboratory Reports.

17. COC documentation.

18. Field sampling logs including field instrument calibration, indicator parameters, and parameter stabilization criteria.

19. Well inspection documentation including well signage, well access, sampling and purging equipment condition, and any site conditions that may affect sampling.

20. Documentation of non-functioning or dry well locations.

21. Table of current analytical results for each well.

22. Statistical analyses.

23. Certification by a Qualified Groundwater Scientist.

10. STATISTICAL ANALYSIS

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.

According to the State CCR Rule Chapter 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 to be evaluated. The statistical test chosen will be conducted separately for each constituent in each well and will be conducted in accordance with the *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (USEPA, 2009). As authorized by the rule, statistical tests that will be used include:

1. A tolerance or 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 tolerance or 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 that meets the performance standards of §257.93(g) [§257.93(f)(5)]. 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 a combination of both. If inter-well methods are used, the results will 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 groundwater protection standards.

A site-specific statistical analysis plan that provides details regarding the statistical methods to be used for the new CCR landfill will be placed in the Site's operating record pursuant to Chapter 391-3-4-.10(6). **Figure 1**, *Statistical Analysis Plan Overview*, presents a flowchart that depicts the process to be followed to develop the site-specific plan. **Figure 2**, *Decision Logic for Computing Tolerance or Prediction Intervals*, presents the logic used to calculate site-specific statistical limits and test compliance results against those limits.

FIGURE 1. STATISTICAL ANALYSIS PLAN OVERVIEW

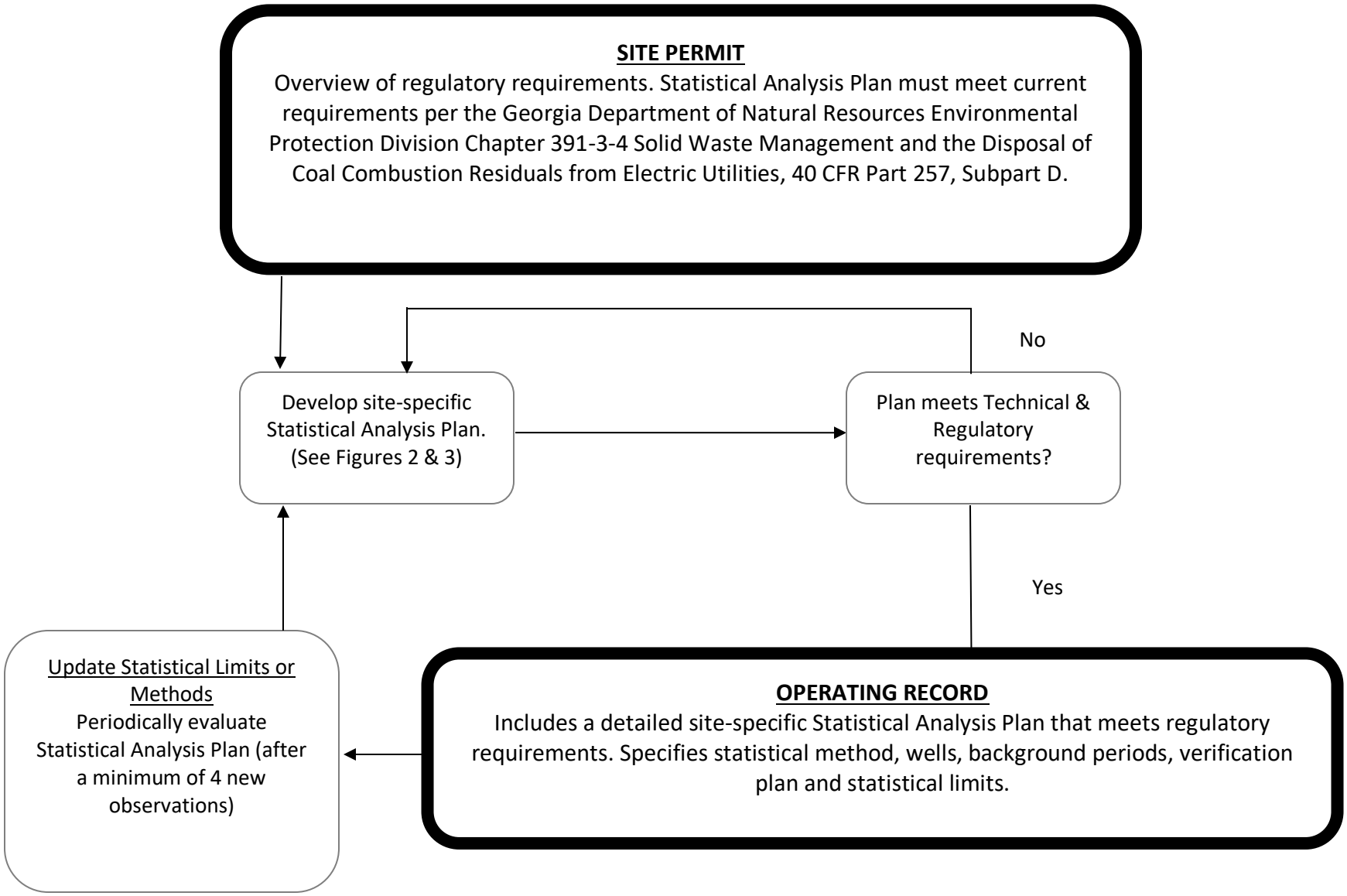
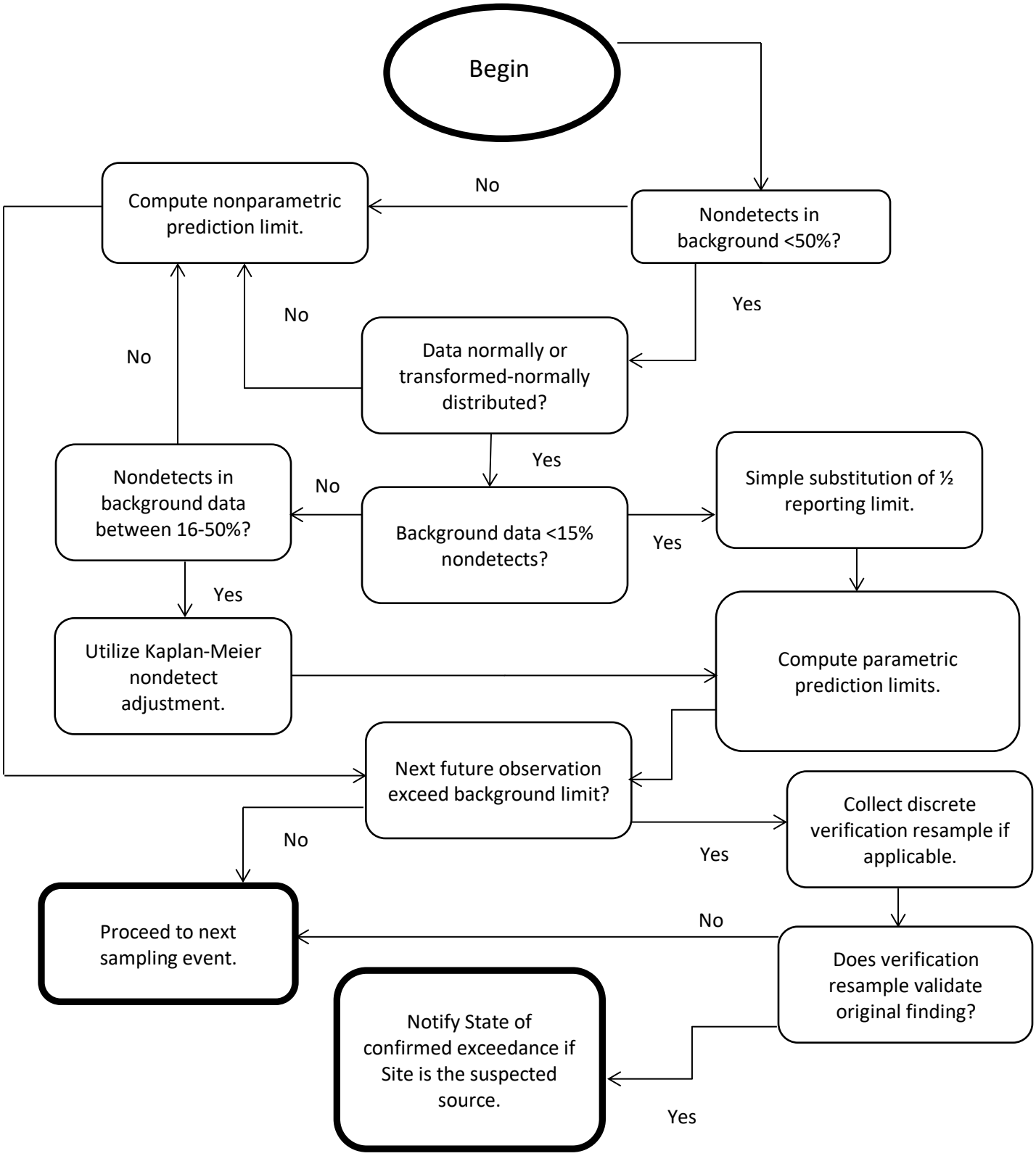


FIGURE 2. DECISION LOGIC FOR COMPUTING TOLERANCE OR PREDICTION INTERVALS



11. REFERENCES

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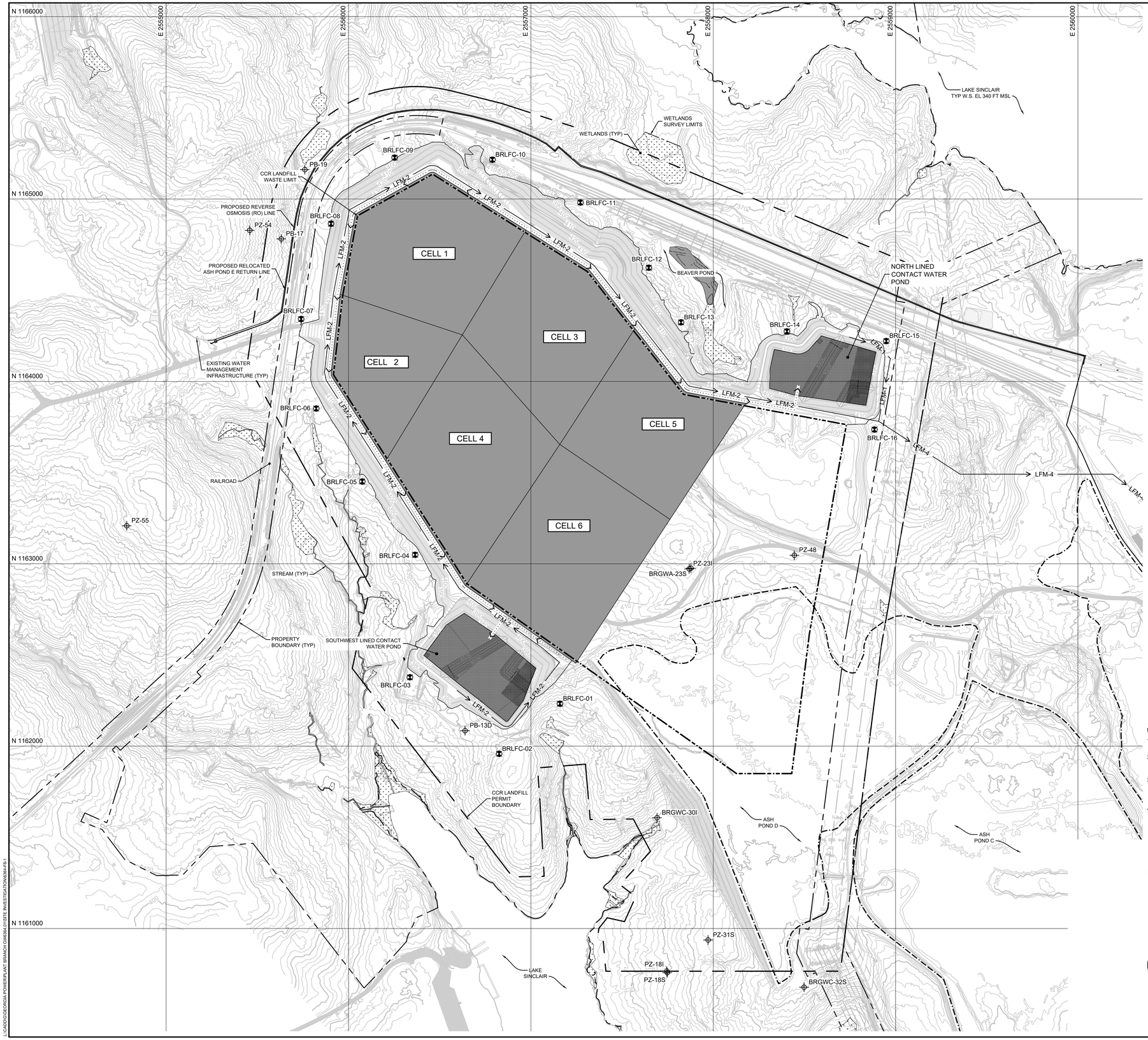
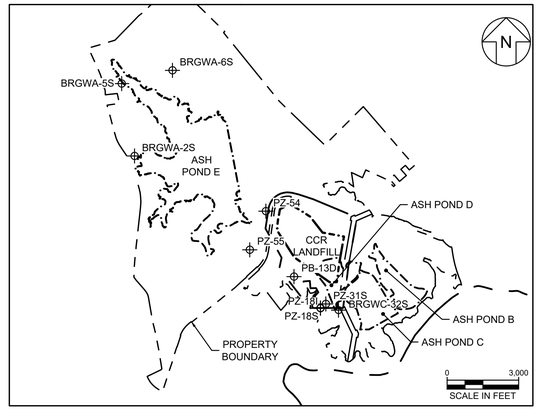
APPENDICES

A. MONITORING SYSTEM DETAILS
B. GROUNDWATER MONITORING WELL INFORMATION
C. GROUNDWATER SAMPLING PROCEDURE

A. MONITORING SYSTEM DETAILS





LEGEND

- EXISTING MONITORING WELL OR WATER LEVEL PIEZOMETER
- EXISTING PHASE I MONITORING WELL
- CCR PERMIT BOUNDARY
- PROPERTY BOUNDARY
- LIMIT OF WASTE
- WETLAND
- LINED CCR LANDFILL CELL
- CONTACT WATER FLOW DIRECTION
- LFM-1 LEACHATE FORCEMAIN

EXISTING MONITORING WELL OR PIEZOMETER		
WELL ID	NORTHING	EASTING
BRGWA-2S	1167139.70	2549952.60
BRGWA-5S	1170177.50	2549415.50
BRGWA-6S	1170732.90	2551540.80
BRGWA-23S	1162971.70	2557868.10
BRGWC-30I	1161607.60	2557691.80
BRGWC-32S	1160677.70	2558497.90
BRGWC-47	1162700.70	2559456.70
PB-13D	1162084.50	2556638.80
PZ-18I	1160766.20	2557745.50
PZ-18S	1160757.30	2557747.40
PZ-23I	1162975.40	2557877.70
PZ-31S	1160936.90	2557971.80
PZ-48	1163046.70	2558444.60
PZ-54	1164828.70	2555458.30
PZ-55	1163208.00	2554783.60

PHASE I MONITORING WELLS		
WELL ID	NORTHING	EASTING
BRLFC-01	1162232.42	2557158.88
BRLFC-02	1161957.83	2556825.52
BRLFC-03	1162377.23	2556336.55
BRLFC-04	1163049.10	2556365.01
BRLFC-05	1163451.18	2556075.02
BRLFC-06	1163851.24	2555822.51
BRLFC-07	1164341.77	2555739.63
BRLFC-08	1164864.46	2555903.70
BRLFC-09	1165226.62	2556252.71
BRLFC-10	1165215.38	2556788.96
BRLFC-11	1164980.79	2557271.69
BRLFC-12	1164623.00	2557646.35
BRLFC-13	1164323.88	2557823.21
BRLFC-14	1164274.06	2558403.90
BRLFC-15	1164221.17	2558948.77
BRLFC-16	1163735.78	2558883.99

NOTES:

1. MONITORING WELLS WILL BE SCREENED IN THE SAPROLITE AND PARTIALLY WEATHERED ROCK UNITS (IF PRESENT) TO TARGET THE PRIMARY ZONE OF GROUNDWATER FLOW IN THE UPPERMOST AQUIFER.
2. EXISTING WELL LOCATIONS BRGWA-2S, BRGWA-5S, AND BRGWA-6S, LOCATED UPGRADIENT OF ASH POND E, WERE SELECTED AS BACKGROUND LOCATIONS AS THEY ARE SCREENED AT THE APPROPRIATE DEPTHS WITHIN THE SAME GEOLOGIC FORMATION AS THE PROPOSED GROUNDWATER MONITORING NETWORK.
3. EXISTING WELLS AND PIEZOMETERS (BRGWC-30I, BRGWA-23S, BRGWC-47, BRGWC-32S, PB-13D, PZ-18S, PZ-31S, PZ-23I, PZ-48, PZ-54, AND PZ-55) WILL BE USED FOR DEPTH TO WATER MEASUREMENTS AND POTENTIOMETRIC SURFACE EVALUATION. THESE LOCATIONS ARE NOT PART OF THE COMPLIANCE MONITORING WELL NETWORK FOR THE CCR LANDFILL; HOWEVER, PZ-54 AND PZ-55 MAY BE CONSIDERED FOR INCLUSION IN THE NETWORK PENDING FURTHER EVALUATION.
4. GROUNDWATER PIEZOMETERS (PZ-11S, PZ-12D, AND PZ-22S/PZ-39), TEMPORARY PIEZOMETERS (PB-1S, PB-2D, PB-4S, PB-4D, PB-7S, PB-8S, PB-8D, PB-10D, PB-10S, PB-13S, PB-16, AND PB-18), AND MONITORING NETWORK WELLS (BRGWA-12I AND BRGWA-12S) HAVE BEEN ABANDONED PRIOR TO LANDFILL CONSTRUCTION. GROUNDWATER PIEZOMETERS (PZ-23I AND PZ-48) AND MONITORING NETWORK WELL (BRGWA-23S) WILL BE ABANDONED PRIOR TO PHASE II AS SHOWN IN THIS PLAN. ABANDONMENT WILL BE IN ACCORDANCE WITH THE PROCEDURES OUTLINED IN THE GROUNDWATER MONITORING PLAN AND IN THE SITE LIMITATION ISSUED BY GA EPD.

Georgia Power

PROPOSED GROUNDWATER MONITORING NETWORK - PHASE 1

PLANT BRANCH CCR LANDFILL
PUTNAM COUNTY, GEORGIA

GEORGIA ENVIRONMENTAL PROTECTION DIVISION
Approved
Solid Waste Management Program

Geosyntec consultants
1255 ROBERTS BOULEVARD NW, SUITE 200
KENNESAW, GEORGIA 30144-3694
PHONE: 678.202.9500
WWW.GEOSYNTEC.COM

PROJ. NO.	GW6364	DWG.	6364-F6-1
SCALE	1" = 250'	EDIT	09.22.23
DATE	SEPTEMBER 2023	FIGURE	A - 1

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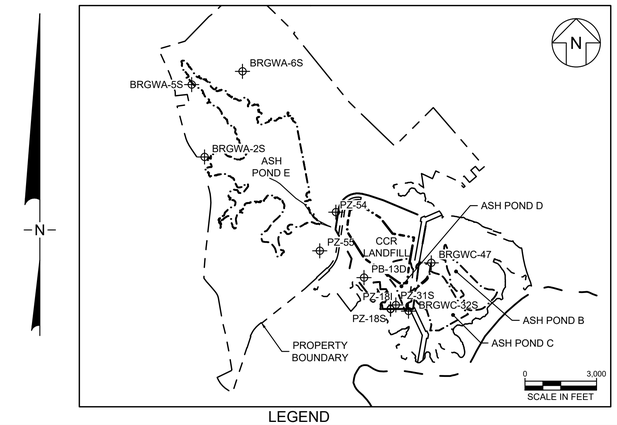

LEGEND

- EXISTING MONITORING WELL OR PIEZOMETER
- EXISTING AND PROPOSED PHASES 1 AND 2 MONITORING WELL
- UNDERDRAIN PIPE AND SUMP
- CCR PERMIT BOUNDARY
- PROPERTY BOUNDARY
- LIMIT OF WASTE
- WETLAND
- LINED CCR LANDFILL CELL
- STORMWATER FLOW DIRECTION
- CONTACT WATER FLOW DIRECTION
- LFM-1 LEACHATE FORCEMAIN
- INTERIM BERM TO SEPARATE CONTACT WATER AND STORMWATER FLOW

EXISTING MONITORING WELL OR PIEZOMETERS

WELL ID	NORTHING	EASTING
BRGWA-2S	1167139.70	2549952.60
BRGWA-5S	1170177.50	2549415.50
BRGWA-6S	1170732.90	2551540.80
BRGWC-30I	1161607.60	2557691.80
BRGWC-32S	1160677.70	2558497.90
BRGWC-47	1162700.70	2559456.70
PB-13D	1162084.50	2556638.80
PZ-18I	1160766.20	2557745.50
PZ-18S	1160757.30	2557747.40
PZ-31S	1160936.90	2557971.80
PZ-54	1164828.70	2555458.30
PZ-55	1163208.00	2554783.60

PHASES 1 AND 2 MONITORING WELLS

WELL ID	NORTHING	EASTING
BRLFC-01	1162232.42	2557158.88
BRLFC-02	1161957.83	2556825.52
BRLFC-03	1162377.23	2556336.55
BRLFC-04	1163049.10	2556365.01
BRLFC-05	1163451.18	2556075.02
BRLFC-06	1163851.24	2555822.51
BRLFC-07	1164341.77	2555739.63
BRLFC-08	1164864.46	2555903.70
BRLFC-09	1165226.62	2556252.71
BRLFC-10	1165215.38	2556788.96
BRLFC-11	1164980.79	2557271.69
BRLFC-12	1164623.00	2557646.35
BRLFC-13	1164323.88	2557823.21
BRLFC-14	1164274.06	2558403.90
BRLFC-15	1164221.17	2558948.77
BRLFC-16	1163735.78	2558883.99
BRLFC-17	1163383.08	2558812.41
BRLFC-18	1162880.75	2558700.30
BRLFC-19	1162389.46	2558655.16
BRLFC-20	1161941.00	2558633.71
BRLFC-21	1161610.91	2558489.93
BRLFC-22	1161225.48	2558311.09
BRLFC-23	1161509.38	2557832.88
BRLFC-24	1161780.67	2557706.62
BRLFC-25	1161946.68	2557571.66

NOTES:

1. MONITORING WELLS WILL BE SCREENED IN THE SAPROLITE AND PARTIALLY WEATHERED ROCK UNITS (IF PRESENT) TO TARGET THE PRIMARY ZONE OF GROUNDWATER FLOW IN THE UPPERMOST AQUIFER.
2. EXISTING WELL LOCATIONS BRGWA-2S, BRGWA-5S, AND BRGWA-6S, LOCATED UPGRADIENT OF ASH POND E, WERE SELECTED AS BACKGROUND LOCATIONS AS THEY ARE SCREENED AT THE APPROPRIATE DEPTHS WITHIN THE SAME GEOLOGIC FORMATION AS THE PROPOSED GROUNDWATER MONITORING NETWORK.
3. EXISTING WELLS AND PIEZOMETERS (BRGWC-30I, BRGWC-47, BRGWC-32S, PB-13D, PZ-18S, PZ-31S, PZ-39, PZ-48, PZ-54, AND PZ-55) WILL BE USED FOR DEPTH TO WATER MEASUREMENTS AND POTENTIOMETRIC SURFACE EVALUATION. THESE LOCATIONS ARE NOT PART OF THE COMPLIANCE MONITORING WELL NETWORK FOR THE CCR LANDFILL; HOWEVER, PZ-54 AND PZ-55 MAY BE CONSIDERED FOR INCLUSION IN THE NETWORK PENDING FURTHER EVALUATION.
4. GROUNDWATER PIEZOMETERS (PZ-11S, PZ-12D, AND PZ-22S/PZ-39), TEMPORARY PIEZOMETERS (PB-1S, PB-2D, PB-4S, PB-4D, PB-7S, PB-8S, PB-8D, PB-10D, PB-10S, PB-13S, PB-16, AND PB-18), AND MONITORING NETWORK WELLS (BRGWA-12I AND BRGWA-12S) HAVE BEEN ABANDONED PRIOR TO LANDFILL CONSTRUCTION. GROUNDWATER PIEZOMETERS (PZ-23I AND PZ-48) AND MONITORING NETWORK WELL (BRGWA-23S) WILL BE ABANDONED PRIOR TO PHASE II AS SHOWN IN THIS PLAN. ABANDONMENT WILL BE IN ACCORDANCE WITH THE PROCEDURES OUTLINED IN THE GROUNDWATER MONITORING PLAN AND IN THE SITE LIMITATION ISSUED BY GA EPD.

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Georgia Power

PROPOSED GROUNDWATER MONITORING NETWORK - PHASE 2

PLANT BRANCH CCR LANDFILL
PUTNAM COUNTY, GEORGIA

GEORGIA DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
Approved
Solid Waste Management Program
Approved By: _____ Date: _____

Geosyntec consultants
1255 ROBERTS BOULEVARD NW, SUITE 200
KENNESAW, GEORGIA 30144-3694
PHONE: 678.202.9500
WWW.GEOSYNTEC.COM

PROJ. NO.	GW6364	DWG. 6364-F6-2	EDIT 09.22.23
SCALE	1" = 250'	FIGURE A - 2	
DATE	SEPTEMBER 2023		

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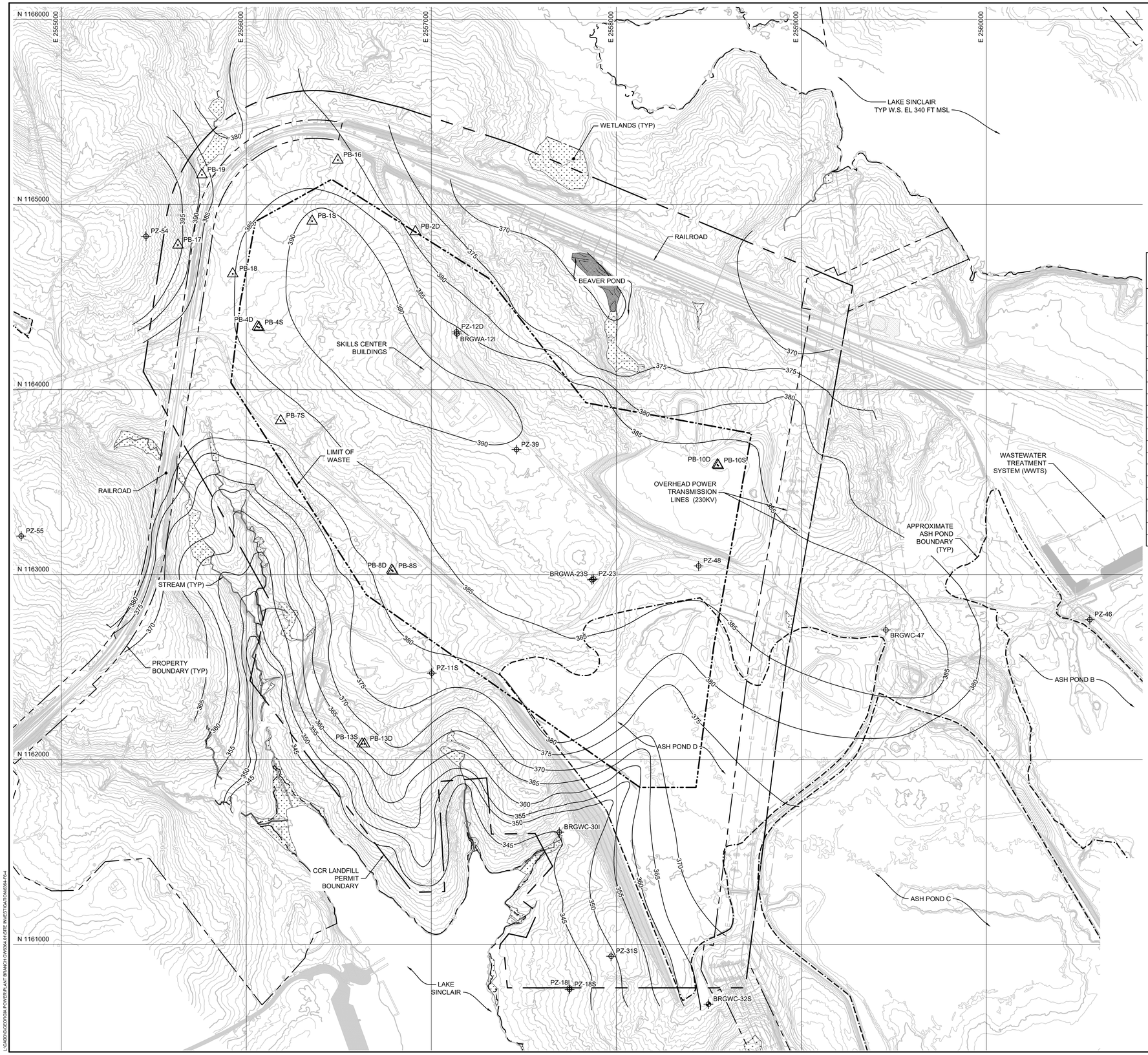

LEGEND

- EXISTING MONITORING WELL AND WATER LEVEL PIEZOMETER
- TEMPORARY PIEZOMETER
- CCR PERMIT BOUNDARY
- PROPERTY BOUNDARY
- LIMIT OF WASTE
- 394 — GROUNDWATER ELEVATION ISO-CONTOUR (DASHED WHERE INFERRED) (14 APRIL 2022)
- WETLAND

EXISTING MONITORING WELLS AND WATER LEVEL PIEZOMETERS

WELL ID	NORTHING	EASTING	GW ELEV. (NOTES 2, 3, AND 4)
BRGWA-2S	1167139.70	2549952.60	N/A
BRGWA-5S	1170177.50	2549415.50	N/A
BRGWA-6S	1170732.90	2551540.80	N/A
BRGWA-12I	1164301.20	2557138.90	385.05
BRGWA-23S	1162971.70	2557868.10	389.49
BRGWC-30I	1161607.60	2557691.80	347.92
BRGWC-32S	1160677.70	2558497.90	366.86
BRGWC-47	1162700.70	2559456.70	386.19
PZ-11S	1162467.30	2557002.50	377.69
PZ-12D	1164311.90	2557136.40	356.20
PZ-18S	1160757.30	2557747.40	342.73
PZ-18I	1160766.20	2557745.50	342.63
PZ-23I	1162975.40	2557877.70	389.40
PZ-31S	1160936.90	2557971.80	349.89
PZ-39	1163675.40	2557460.50	DRY
PZ-46	1162756.20	2560559.00	376.12
PZ-48	1163046.70	2558444.60	388.69
PZ-54	1164828.70	2555458.30	395.64
PZ-55	1163208.00	2554783.60	407.36

TEMPORARY PIEZOMETERS

WELL ID	NORTHING	EASTING	GW ELEV. (NOTES 2, 3, AND 4)
PB-1S	1164910.50	2556355.90	390.82
PB-2D	1164853.60	2556914.20	379.48
PB-4S	1164335.10	2556069.20	388.95
PB-4D	1164339.60	2556060.70	389.74
PB-7S	1163831.30	2556186.20	383.48
PB-8S	1163018.20	2556792.30	384.62
PB-8D	1163024.40	2556786.70	383.73
PB-10S	1163588.90	2558551.20	387.87
PB-10D	1163593.40	2558546.70	387.85
PB-13S	1162084.40	2556626.10	365.85
PB-13D	1162084.50	2556638.80	365.62
PB-16	1165240.85	2556495.02	380.02
PB-17	1164781.39	2555630.85	396.22
PB-18	1164625.82	2555926.77	392.24
PB-19	1165160.95	2555760.32	389.50

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
Approved
Solid Waste Management Program
Approved By: Digitally signed by Mark Wescott P.G. Date: 2023.09.13 14:52:27 -04'00'

NOTES:

1. WELLS AND PIEZOMETERS SHOWN WERE USED TO DEVELOP THE POTENTIOMETRIC SURFACE. TEMPORARY PIEZOMETERS AND WELLS LOCATED WITHIN THE CLOSURE FOOTPRINT HAVE BEEN OR WILL BE ABANDONED DURING CLOSURE AND FOR CONSTRUCTION ACTIVITIES.
2. WATER LEVEL MEASUREMENTS WERE RECORDED ON APRIL14, 2022. ELEVATION PROVIDED IN FEET ABOVE MEAN SEA LEVEL (FT MSL) BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). THE MAP SHOWS ONLY THE WELLS/PIEZOMETERS CURRENTLY INSTALLED AT THE TIME OF THE GAUGING EVENT.
3. PZ-12D AND PB-4D WERE NOT USED TO DEVELOP THE POTENTIOMETRIC SURFACE MAP AS THEY ARE SCREENED IN A DEEPER BEDROCK ZONE AND ARE NOT REPRESENTATIVE OF THE WATER LEVELS IN THE UPPERMOST AQUIFER. PZ-39 WAS NOT USED AS IT WAS DRY AT THE TIME OF THE WATER LEVEL MEASUREMENTS.
4. PB-18 WAS NOT USED FOR CONTOUR INTERPOLATION DUE TO CONSTRUCTION ACTIVITIES THAT CREATED ANOMALOUS WATER LEVELS AT THE TIME OF GAUGING.
5. THE POTENTIOMETRIC SURFACE SHOWN IS A COMPOSITE SURFACE BASED ON OBSERVED GROUNDWATER ELEVATIONS FROM 14 APRIL 2022 ACROSS THE MAJORITY OF THE SITE, AND PROJECTED ELEVATIONS BENEATH THE ASH POND D AREA THAT APPROXIMATE THE CONDITIONS LIKELY TO EXIST DURING THE LATER STAGES OF POND CLOSURE ACTIVITIES. THE PROJECTED POST-CLOSURE ELEVATIONS BENEATH THE ASH POND D PORTION OF THE SITE ARE BASED ON (I) INFLUENCE OF THE PROPOSED UNDERDRAIN SYSTEM, (II) PRE-CONSTRUCTION TOPOGRAPHY AND SURFACE WATER FEATURES, AND (III) BEST PROFESSIONAL JUDGEMENT AND COMMONLY ACCEPTED HYDROGEOLOGIC PRINCIPLES.

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Georgia Power

POTENTIOMETRIC SURFACE MAP - 14 APRIL 2022

PLANT BRANCH CCR LANDFILL
PUTNAM COUNTY, GEORGIA

Geosyntec consultants
1255 ROBERTS BOULEVARD NW, SUITE 200
KENNESAW, GEORGIA 30144-3694
PHONE: 678.202.9500
WWW.GEOSYNTEC.COM

PROJ. NO.	GW6364	DWG. 6364-F6-4	EDIT 09.22.23
SCALE	1" = 250'	FIGURE A - 3	
DATE	SEPTEMBER 2023		

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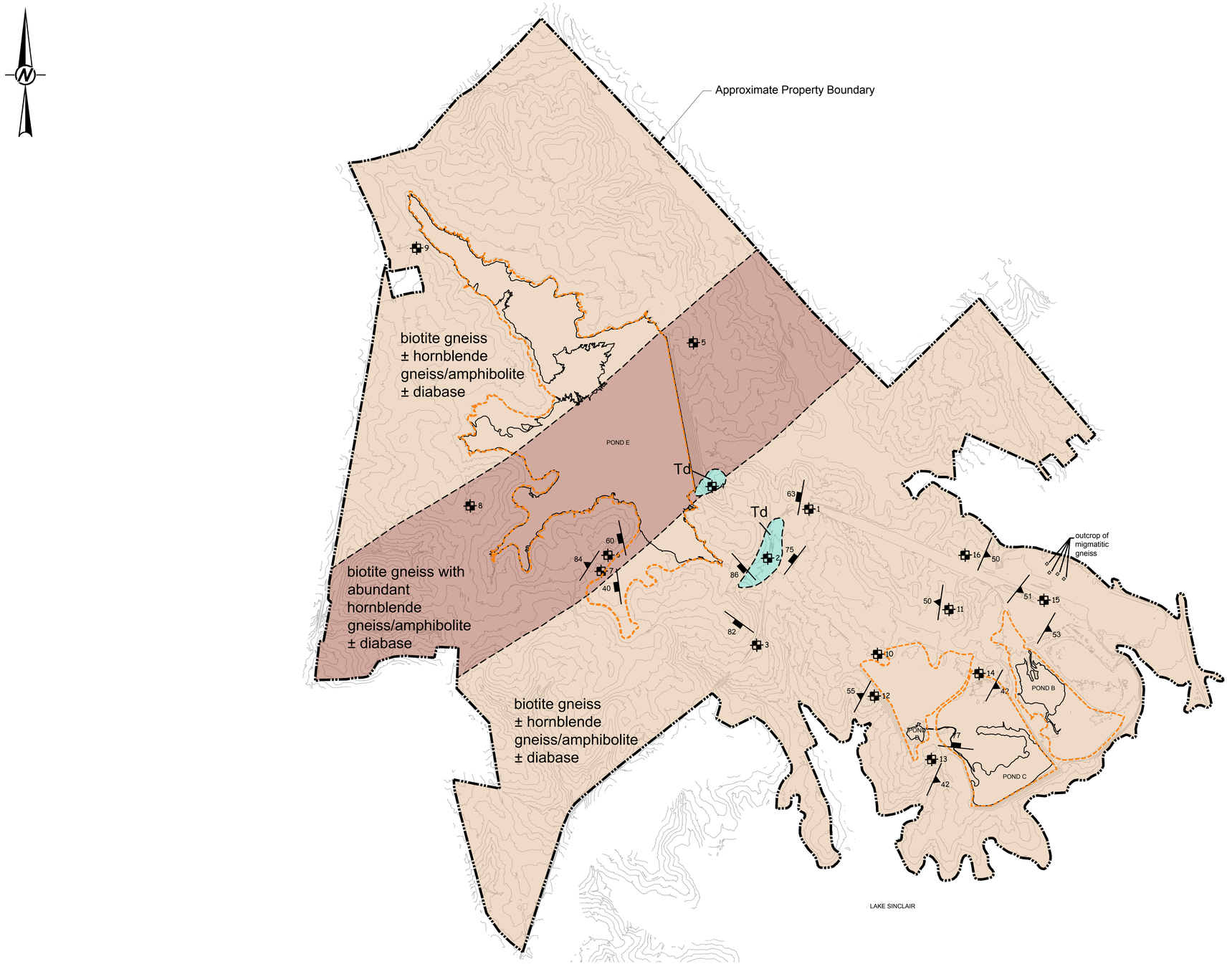


0 1000 2000
1" = 1000' FEET

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
Approved
Solid Waste Management Program
Approved By: Mark Wescott P.G. Digitally signed by Mark Wescott P.G. Date: 2018.01.19 13:43:11 -05'00'

LEGEND

- APPROXIAMTE PROPERTY BOUNDARY
- ESTIMATED EXTENT OF SURFACE IMPOUNDMENTS
- INTERPRETED GEOLOGIC CONTACT
- 77 — JOINTS
- 42 — FOLIATION
- 3 — GEOLOGIC MAP STATION
- DIABASE DIKE
- BIOTITE GNEISS
- BIOTITE GNEISS WITH INTERLAYERED AMPHIBOLITE

REFERENCES

1. PROPERTY LINE PROVIDED BY SOUTHERN COMPANY SERVICES, INC.
2. TOPOGRAPHY OBTAINED BY NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION WEBSITE, www.coast.noaa.gov, JUNE 2016.
3. GEOLOGIC MAPPING CONDUCTED BY PETROLOGIC SOLUTIONS, INC. IN 2016.
4. SURFACE IMPOUNDMENT EXTENT PROVIDED BY SOUTHERN COMPANY SERVICES.

CLIENT
Georgia Power

CONSULTANT
GOLDER

YYYY-MM-DD	2018-10-23
DESIGNED	DLP
PREPARED	DJC
REVIEWED	RPK
APPROVED	DLP

PROJECT
GEOLOGIC AND HYDROGEOLOGIC SUMMARY REPORT
PLANT BRANCH

TITLE
GEOLOGIC MAP

PROJECT NO.	REV.	FIGURE
166625418	0	A-4

Path: C:\TEMP CAD FILES\MAY 11\166625418-Plant Branch\PRODUCTION\A-GEOLOGIC AND HYDROGEOLOGIC REPORT\ | File Name: 166625418A004.dwg

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

0 1 in

Table A-1
Well and Piezometer Location and Construction Details
Plant Branch CCR Landfill
Putnam County, Georgia

Well/Piezometer ID	Easting	Northing	Ground Surface Elevation (ft NAVD 88)	TOC Elevation (ft NAVD 88)	Top of Screen Elevation (ft NAVD 88)	Bottom of Screen Elevation (ft NAVD 88)	Well Depth (ft bgs)	Top of Screen Depth (ft bgs)	Bottom of Screen Depth (ft bgs)	Well Installation Date	Well Abandonment Date	Screened Interval Lithology	Monitoring Designation
Existing Groundwater Monitoring Wells													
BRGWA-2S	2549952.6	1167139.7	440.40	443.20	406.20	396.20	44.6	34.2	44.2	4/02/2014	--	Saprolite	Upgradient (Ash Pond E)
BRGWA-5S	2549415.5	1170177.5	440.80	443.86	411.20	401.20	40.0	29.6	39.6	4/03/2014	--	Saprolite	Upgradient (Ash Pond E)
BRGWA-6S	2551540.8	1170732.9	455.80	458.96	416.70	406.70	49.5	39.1	49.1	4/01/2014	--	Saprolite	Upgradient (Ash Pond E)
BRGWA-12I*	2557138.9	1164301.2	431.50	434.39	364.30	354.30	77.6	67.2	77.2	2/20/2014	5/19/2023	PWR & Bedrock	Upgradient (Ash Ponds B, C, D)
BRGWA-12S*	2557142.9	1164286.6	431.60	434.64	383.70	373.70	58.3	47.9	57.9	3/04/2014	5/14/2023	PWR & Bedrock	Upgradient (Ash Ponds B, C, D)
BRGWA-23S*	2557868.1	1162971.7	425.50	428.24	394.90	384.90	41.0	30.6	40.6	7/26/2016	--	PWR & Bedrock	Upgradient (Ash Ponds B, C, D)
BRGWC-30I	2557691.8	1161607.6	350.00	352.61	340.15	330.15	20.3	9.9	19.9	7/18/2016	--	PWR & Bedrock	Downgradient (Ash Pond D)
BRGWC-32S	2558497.9	1160677.7	403.60	406.39	369.00	359.00	45.0	34.6	44.6	7/20/2016	--	Saprolite	Downgradient (Ash Pond D)
BRGWC-47	2559456.7	1162700.7	408.80	411.20	322.20	312.20	97.0	86.6	96.6	1/26/2018	--	PWR	Downgradient (Ash Pond D)
Existing Water Level Piezometers													
PZ-11S*	2557002.5	1162467.3	390.90	393.99	376.80	366.80	24.5	14.1	24.1	2/20/2014	2/20/2014	Saprolite	Site-wide Water Levels
PZ-12D*	2557136.4	1164311.9	431.40	434.09	350.10	290.10	141.7	81.3	141.3	4/14/2014	4/14/2014	Bedrock	Site-wide Water Levels
PZ-18S	2557747.4	1160757.3	359.70	362.82	345.60	335.60	24.2	14.1	24.1	2/26/2014	--	Saprolite	Site-wide Water Levels
PZ-18I	2557745.5	1160766.2	359.60	362.55	331.30	321.30	38.8	28.3	38.3	2/26/2014	--	PWR & Bedrock	Site-wide Water Levels
PZ-23I*	2557877.7	1162975.4	425.10	427.74	368.60	358.60	67.0	56.5	66.5	7/27/2016	7/29/216	Bedrock	Site-wide Water Levels
PZ-31S	2557971.8	1160936.9	374.30	376.77	344.80	334.80	39.5	29.5	39.5	7/15/2016	--	PWR & Bedrock	Site-wide Water Levels
PZ-39*	2557460.5	1163675.4	432.00	434.78	397.30	387.30	56.5	34.7	44.7	7/30/2016	7/30/2016	Saprolite	Site-wide Water Levels
PZ-46	2560559.0	1162756.2	382.10	384.64	346.50	336.50	47.0	35.6	45.6	2/15/2018	--	PWR & Bedrock	Site-wide Water Levels
PZ-48*	2558444.6	1163046.7	418.30	420.90	361.70	351.70	67.0	56.6	66.6	1/24/2018	1/25/2018	Saprolite, PWR, & Bedrock	Site-wide Water Levels
PZ-54	2555458.3	1164828.7	440.80	443.86	398.80	388.80	52.0	42.0	52.0	5/15/2020	--	Saprolite & PWR	Site-wide Water Levels
PZ-55	2554783.6	1163208.0	450.20	453.07	410.90	400.90	49.3	39.3	49.3	5/19/2020	--	Saprolite & PWR	Site-wide Water Levels
PB-1S*	2556355.9	1164910.5	400.40	403.16	372.40	362.40	38.4	28.0	38.0	1/22/2019	5/04/2023	Saprolite & PWR	Temporary Water Levels
PB-2D*	2556914.2	1164853.6	414.90	416.71	367.90	357.90	57.4	47.0	57.0	12/04/2018	5/04/2023	Bedrock	Temporary Water Levels
PB-4S*	2556069.2	1164335.1	409.30	411.15	371.30	361.30	48.4	38.0	48.0	1/16/2019	5/05/2023	Saprolite & PWR	Temporary Water Levels
PB-4D*	2556060.7	1164339.6	409.00	412.12	304.90	294.90	114.5	104.1	114.1	1/16/2019	5/09/2023	Bedrock	Temporary Water Levels
PB-7S*	2556186.2	1163831.3	399.70	402.88	376.70	366.70	33.4	23.0	33.0	1/14/2016	5/10/2023	Saprolite & PWR	Temporary Water Levels
PB-8S*	2556792.3	1163018.2	389.60	401.82	364.60	354.60	35.4	25.0	35.0	1/08/2019	5/26/2023	Saprolite & PWR	Temporary Water Levels
PB-8D*	2556786.7	1163024.4	398.20	401.74	304.20	294.20	104.4	94.0	104.0	1/08/2019	5/25/2023	Bedrock	Temporary Water Levels
PB-10S*	2558551.2	1163588.9	397.60	400.91	374.60	364.60	33.4	23.0	33.0	1/17/2019	6/28/2023	Saprolite & PWR	Temporary Water Levels
PB-10D*	2558546.7	1163593.4	397.50	400.31	322.50	312.50	85.4	75.0	85.0	1/17/2019	6/28/2023	Bedrock	Temporary Water Levels
PB-13S*	2556626.1	1162084.4	370.80	373.31	330.80	320.80	50.4	40.0	50.0	12/18/2018	5/16/2023	Saprolite	Temporary Water Levels
PB-13D	2556638.8	1162084.5	371.10	373.77	284.10	274.10	97.4	87.0	97.0	12/18/2018	--	Bedrock	Temporary Water Levels
PB-16*	2556495.0	1165240.9	401.24	403.79	368.29	358.29	43.4	33.0	43.0	9/09/2021	5/03/2023	Saprolite	Temporary Water Levels
PB-17	2555630.9	1164781.4	419.22	421.95	386.71	376.71	42.9	32.5	42.5	9/10/2021	--	Saprolite	Temporary Water Levels
PB-18*	2555926.8	1164625.8	402.02	404.77	373.33	363.33	39.1	28.7	38.7	9/10/2021	5/05/2023	Saprolite & PWR	Temporary Water Levels
PB-19	2555760.3	1165161.0	388.97	391.63	356.41	346.41	43.0	32.6	42.6	9/10/2021	--	Saprolite	Temporary Water Levels
Existing and Proposed Monitoring Well Network													
BRLFC-01	2557158.9	1162232.4	378.49	381.35	356.74	346.74	32.3	21.8	31.8	8/30/2022	--	PWR & Bedrock	Downgradient Well
BRLFC-02	2556825.5	1161957.8	381.63	384.13	340.13	330.13	52.0	41.5	51.5	8/24/2022	--	PWR & Bedrock	Downgradient Well
BRLFC-03	2556336.5	1162377.2	366.38	369.42	337.13	327.13	39.8	29.3	39.3	8/23/2022	--	PWR	Downgradient Well
BRLFC-04	2556365.0	1163049.1	385.43	388.42	348.93	338.93	47.0	36.5	46.5	8/23/2022	--	PWR	Downgradient Well
BRLFC-05	2556075.0	1163451.2	380.81	383.62	350.81	340.81	40.5	30.0	40.0	8/22/2022	--	PWR	Downgradient Well
BRLFC-06	2555822.5	1163851.2	391.96	397.85	357.86	347.86	44.6	34.1	44.1	8/21/2022	--	Bedrock	Downgradient Well
BRLFC-07	2555739.6	1164341.8	407.00	409.69	366.30	356.30	51.2	40.7	50.7	8/18/2022	--	PWR & Bedrock	Downgradient Well
BRLFC-08	2555903.7	1164864.5	397.72	400.44	354.42	344.42	53.8	43.3	53.3	8/20/2022	--	PWR	Downgradient Well
BRLFC-09	2556252.7	1165226.6	391.52	394.45	354.62	344.62	47.4	36.9	46.9	9/11/2022	--	PWR	Downgradient Well
BRLFC-10	2556789.0	1165215.4	383.02	386.07	352.92	342.92	40.1	30.1	40.1	9/11/2022	--	Bedrock	Downgradient Well
BRLFC-11	2557271.7	1164980.8	381.30	384.46	353.20	343.20	38.1	28.1	38.1	9/13/2022	--	Bedrock	Downgradient Well
BRLFC-12	2557646.4	1164623.0	376.87	379.92	337.17	327.17	50.2	39.7	49.7	9/09/2022	--	Bedrock	Downgradient Well
BRLFC-13	2557823.2	1164323.9	386.55	389.26	350.05	340.05	47.0	36.5	46.5	9/07/2022	--	PWR	Downgradient Well
BRLFC-14	2558403.9	1164274.1	382.29	384.99	345.99	335.99	46.8	36.3	46.3	9/01/2022	--	PWR & Bedrock	Downgradient Well
BRLFC-15	2558948.8	1164221.2	396.20	399.33	363.10	353.10	43.1	33.1	43.1	8/31/2022	--	PWR & Bedrock	Downgradient Well
BRLFC-16	2558884.0	1163735.8	416.77	419.59	376.97	366.97	49.8	39.8	49.8	8/31/2022	--	PWR & Bedrock	Downgradient Well
BRLFC-17	2557150.3	1162242.0	--	--	--	--	--	--	--	--	--	--	Proposed Downgradient Well
BRLFC-18	2556849.8	1161981.3	--	--	--	--	--	--	--	--	--	--	Proposed Downgradient Well
BRLFC-19	2556339.3	1162379.4	--	--	--	--	--	--	--	--	--	--	Proposed Downgradient Well
BRLFC-20	2556363.0	1163048.0	--	--	--	--	--	--	--	--	--	--	Proposed Downgradient Well
BRLFC-21	2556072.3	1163449.8	--	--	--	--	--	--	--	--	--	--	Proposed Downgradient Well
BRLFC-22	2555813.2	1163883.6	--	--	--	--	--	--	--	--	--	--	Proposed Downgradient Well
BRLFC-23	2555806.5	1164377.6	--	--	--	--	--	--	--	--	--	--	Proposed Downgradient Well
BRLFC-24	2555856.0	1164896.5	--	--	--	--	--	--	--	--	--	--	Proposed Downgradient Well

Notes:
ID = Identification
ft NAVD 88 = Feet above North American Vertical Datum (NAVD) of 1988
TOC = Top of Casing
ft bgs = Feet below ground surface
1. Table only includes wells and piezometers at or within the immediate vicinity of the CCR landfill site, or wells proposed to be used for the monitoring network
2. Temporary piezometers were installed by Geosyntec from December 2018 to January 2019, BRLFC-series were installed by Geosyntec from August 2022 to November 2022
3. Northing and Easting are in feet in the Georgia State Plane West system

*Groundwater piezometers (PZ-11S, PZ-12D, AND PZ-22S/PZ-39), temporary piezometers (PB-1S, PB-2D, PB-4S, PB-4D, PB-7S, PB-8S, PB-8D, PB-10D, PB-10S, PB-13S, PB-16, AND PB-18), and monitoring network wells (BRGWA-12I AND BRGWA-12S) have been abandoned prior to landfill construction. Groundwater piezometers (PZ-23I AND PZ-48) and monitoring network well (BRGWA-23S) will be abandoned prior to phase II as shown in this plan. Abandonment will be in accordance with the procedures outlined in section 4.3 of this plan and in the site limitation issued by GA EPD.

B. GROUNDWATER MONITORING WELL INFORMATION

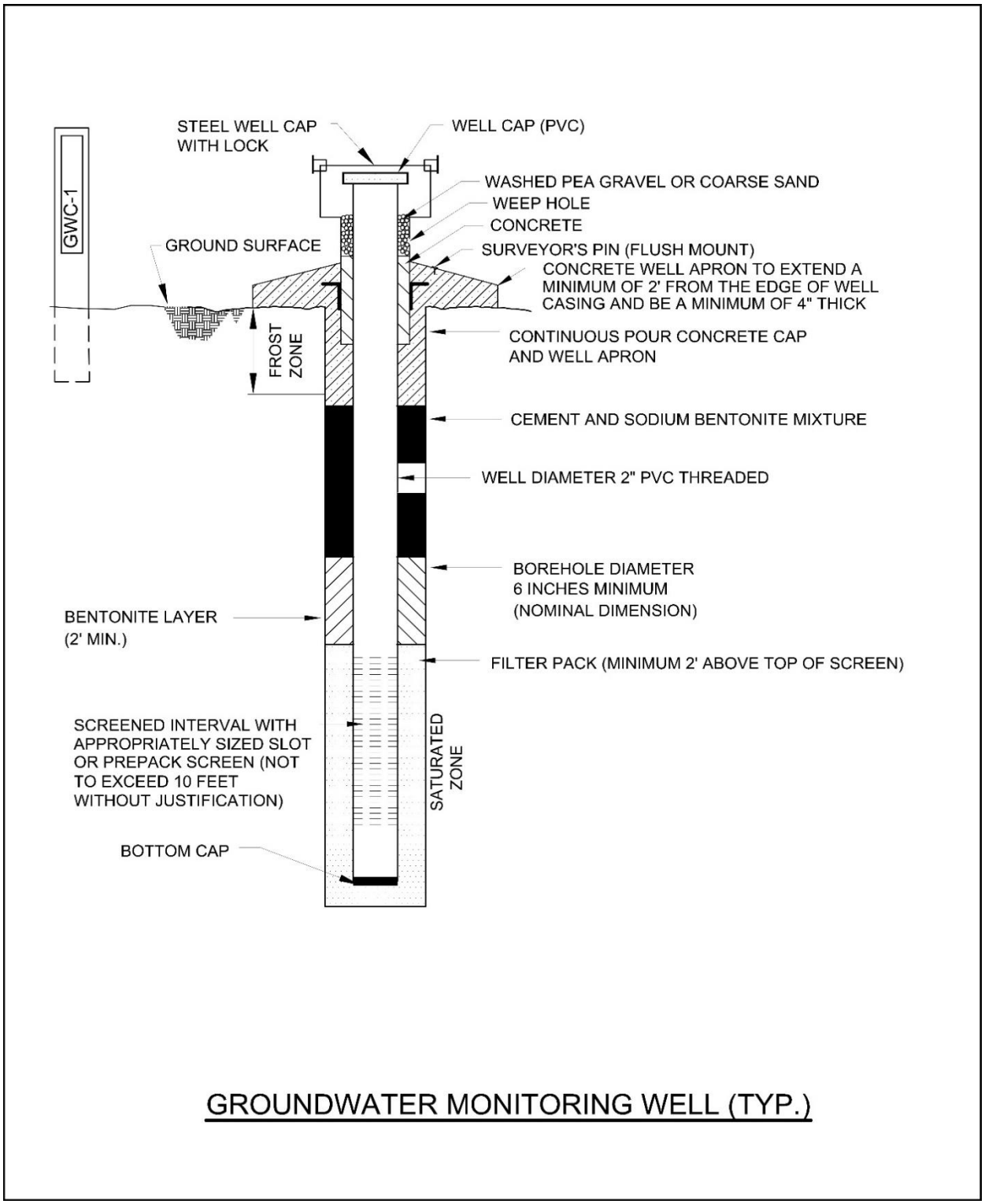
B-1 GROUNDWATER MONITORING WELL DETAIL

B-2 DRILLERS PERFORMANCE BONDS

B-3 SURVEYOR CERTIFICATION

B-4 BORING LOGS

GROUNDWATER MONITORING WELL DETAIL



DRILLERS PERFORMANCE BONDS

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, 2017
(MONTH-DAY-YEAR)

and ending on June 30, 2018
(MONTH-DAY-YEAR)

Amount of bond $10,000.00

Description of bond Water Well Contractors & Drillers

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
Approved
Solid Waste Management Program
Approved By: Mark Wescott P.G. Digitally signed by Mark Wescott P.G. Date: 2024.01.19 12:44:03 -05'00'

DRAFT

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 May 04, 2017
(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. 7710213

American States Insurance Company
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 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, Brooke A. Sharp; Christine Doczy; D-Ann Kleidosty; Gary D. Eklund; Sharon J. Potts; Sylvia M. Ogle

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 4th day of April, 2017.

FIRST NATIONAL INSURANCE COMPANY OF AMERICA INCORPORATED 1928 NEW HAMPSHIRE
GENERAL INSURANCE COMPANY OF AMERICA INCORPORATED 1923 NEW HAMPSHIRE
SAFECO INSURANCE COMPANY OF AMERICA INCORPORATED 1953 NEW HAMPSHIRE
AMERICAN STATES INSURANCE COMPANY INCORPORATED 1929 INDIANA

American States Insurance Company
First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

By: David M. Carey
David M. Carey, Assistant Secretary

STATE OF PENNSYLVANIA ss
COUNTY OF MONTGOMERY

On this 4th day of April, 2017, 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.

DRAFT

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.

TERESA PASTELLA COMMONWEALTH OF PENNSYLVANIA NOTARY PUBLIC

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
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions 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, 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 4th day of May, 2017.

FIRST NATIONAL INSURANCE COMPANY OF AMERICA INCORPORATED 1928 NEW HAMPSHIRE
GENERAL INSURANCE COMPANY OF AMERICA INCORPORATED 1923 NEW HAMPSHIRE
SAFECO INSURANCE COMPANY OF AMERICA INCORPORATED 1953 NEW HAMPSHIRE
AMERICAN STATES INSURANCE COMPANY INCORPORATED 1929 INDIANA

By: Renee C. Llewellyn
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.

SURETY RIDER

To be attached to and form a part of

Bond No. 800031223

Type of Bond: Performance Bond for Water Well Contractors

dated effective June 30, 2017
(MONTH-DAY-YEAR)

executed by Michael C. Rice/Cascade Drilling, L.P. , as Principal,
(PRINCIPAL)

and by Atlantic Specialty Insurance Company , as Surety,

in favor of State of Georgia
(OBLIGEE)

in consideration of the mutual agreements herein contained the Principal and the Surety hereby consent to changing

Coverage under the bond to include:
Michael Coleman

DRAFT

Nothing herein contained shall vary, alter or extend any provision or condition of this bond except as herein expressly stated.

This rider is effective December 21, 2017
(MONTH-DAY-YEAR)

Signed and Sealed December 21, 2017
(MONTH-DAY-YEAR)

Michael C. Rice/Cascade Drilling, L.P.
(PRINCIPAL)

By: _____
(PRINCIPAL)

Atlantic Specialty Insurance Company

By: _____
Elizabeth R. Hahn, Attorney-in-Fact

ATLANTIC SPECIALTY INSURANCE COMPANY CORPORATE SEAL 986 NEW YORK

S-0443/GE 8/08

XDP

OneBeacon
INSURANCE GROUP

Power of Attorney

KNOW ALL MEN BY THESE PRESENTS, that ATLANTIC SPECIALTY INSURANCE COMPANY, a New York corporation with its principal office in Plymouth, Minnesota, does hereby constitute and appoint: **Deanna M. French, Jill A. Wallace, Susan B. Larson, Elizabeth R. Hahn, Jana M. Roy, Scott McGilvray, Mindee L. Rankin, Ronald J. Lange, John R. Claeys, Roger Kaltenbach, Guy Armfield, Scott Fisher**, each individually if there be more than one named, its true and lawful Attorney-in-Fact, to make, execute, seal and deliver, for and on its behalf as surety, any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof; provided that no bond or undertaking executed under this authority shall exceed in amount the sum of: **sixty million dollars ($60,000,000)** and the execution of such bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof in pursuance of these presents, shall be as binding upon said Company as if they had been fully signed by an authorized officer of the Company and sealed with the Company seal. This Power of Attorney is made and executed by authority of the following resolutions adopted by the Board of Directors of ATLANTIC SPECIALTY INSURANCE COMPANY on the twenty-fifth day of September, 2012:

Resolved: That the President, any Senior Vice President or Vice-President (each an "Authorized Officer") may execute for and in behalf of the Company any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, and affix the seal of the Company thereto; and that the Authorized Officer may appoint and authorize an Attorney-in-Fact to execute on behalf of the Company any and all such instruments and to affix the Company seal thereto; and that the Authorized Officer may at any time remove any such Attorney-in-Fact and revoke all power and authority given to any such Attorney-in-Fact.

Resolved: That the Attorney-in-Fact may be given full power and authority to execute for and in the name and on behalf of the Company any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, and any such instrument executed by any such Attorney-in-Fact shall be as binding upon the Company as if signed and sealed by an Authorized Officer and, further, the Attorney-in-Fact is hereby authorized to verify any affidavit required to be attached to bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof.

This power of attorney is signed and sealed by facsimile under the authority of the following Resolution adopted by the Board of Directors of ATLANTIC SPECIALTY INSURANCE COMPANY on the twenty-fifth day of September, 2012:

Resolved: That the signature of an Authorized Officer, the signature of the Secretary or the Assistant Secretary, and the Company seal may be affixed by facsimile to any power of attorney or to any certificate relating thereto appointing an Attorney-in-Fact for purposes only of executing and sealing any bond, undertaking, recognizance or other written obligation in the nature thereof, and any such signature and seal where so used, being hereby adopted by the Company as the original signature of such officer and the original seal of the Company, to be valid and binding upon the Company with the same force and effect as though manually affixed.

IN WITNESS WHEREOF, ATLANTIC SPECIALTY INSURANCE COMPANY has caused these presents to be signed by an Authorized Officer and the seal of the Company to be affixed this eighth day of December, 2014.

DRAFT

ATLANTIC SPECIALTY INSURANCE COMPANY CORPORATE SEAL 1986 NEW YORK

By _____
Paul J. Brehm, Senior Vice President

STATE OF MINNESOTA
HENNEPIN COUNTY

On this eighth day of December, 2014, before me personally came Paul J. Brehm, Senior Vice President of ATLANTIC SPECIALTY INSURANCE COMPANY, to me personally known to be the individual and officer described in and who executed the preceding instrument, and he acknowledged the execution of the same, and being by me duly sworn, that he is the said officer of the Company aforesaid, and that the seal affixed to the preceding instrument is the seal of said Company and that the said seal and the signature as such officer was duly affixed and subscribed to the said instrument by the authority and at the direction of the Company.

TARA JANELLE STAFFORD
NOTARY PUBLIC - MINNESOTA
My Commission Expires
January 31, 2020

_____
Notary Public

I, the undersigned, Assistant Secretary of ATLANTIC SPECIALTY INSURANCE COMPANY, a New York Corporation, do hereby certify that the foregoing power of attorney is in full force and has not been revoked, and the resolutions set forth above are now in force.

Signed and sealed. Dated 21 day of December, 2017

ATLANTIC SPECIALTY INSURANCE COMPANY CORPORATE SEAL 1986 NEW YORK

This Power of Attorney expires
October 1, 2019

_____
James G. Jordan, Assistant Secretary

COPY

Bond Number K08315607

Performance Bond For Water Well Contractors And Drillers

Name of Water Well Contractor or Driller Michael C. Rice/Cascade Drilling, L.P.

Know All Men By These Present

That we Michael C. Rice/Cascade Drilling, L.P. AND ANY AND ALL EMPLOYEES, OFFICERS AND PARTNERS, as Principal, and Westchester Fire Insurance Company 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.

DRAFT

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 9/20/13 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 20th day of, September 2013.

Michael C. Rice/Cascade Drilling, L.P.

PRINCIPAL, BY _____ (L.S.) TITLE: _____

Westchester Fire Insurance Company

SURETY BY: Roxana Palacios

Roxana Palacios, Attorney-in-Fact

GEORGIA REGISTERED AGENT N/A SEAL:

Revised December 2012

SURETY RIDER

To be attached to and form a part of

Bond No. 800031223

Type of Bond: Performance Bond for Water Well Contractors

dated effective June 30, 2017
(MONTH-DAY-YEAR)

executed by Michael C. Rice/Cascade Drilling, L.P. , as Principal,
(PRINCIPAL)

and by Atlantic Specialty Insurance Company , as Surety,

in favor of State of Georgia
(OBLIGEE)

in consideration of the mutual agreements herein contained the Principal and the Surety hereby consent to changing

Coverage under the bond to include:
Michael Coleman

DRAFT

Nothing herein contained shall vary, alter or extend any provision or condition of this bond except as herein expressly stated.

This rider is effective December 21, 2017
(MONTH-DAY-YEAR)

Signed and Sealed December 21, 2017
(MONTH-DAY-YEAR)

Michael C. Rice/Cascade Drilling, L.P.
(PRINCIPAL)

By: _____
(PRINCIPAL)

Atlantic Specialty Insurance Company

By: _____
Elizabeth R. Hahn, Attorney-in-Fact

ATLANTIC SPECIALTY INSURANCE COMPANY CORPORATE SEAL 986 NEW YORK

S-0443/GE 8/08

XDP

OneBeacon
INSURANCE GROUP

Power of Attorney

KNOW ALL MEN BY THESE PRESENTS, that ATLANTIC SPECIALTY INSURANCE COMPANY, a New York corporation with its principal office in Plymouth, Minnesota, does hereby constitute and appoint: **Deanna M. French, Jill A. Wallace, Susan B. Larson, Elizabeth R. Hahn, Jana M. Roy, Scott McGilvray, Mindee L. Rankin, Ronald J. Lange, John R. Claeys, Roger Kaltenbach, Guy Armfield, Scott Fisher**, each individually if there be more than one named, its true and lawful Attorney-in-Fact, to make, execute, seal and deliver, for and on its behalf as surety, any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof; provided that no bond or undertaking executed under this authority shall exceed in amount the sum of: **sixty million dollars ($60,000,000)** and the execution of such bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof in pursuance of these presents, shall be as binding upon said Company as if they had been fully signed by an authorized officer of the Company and sealed with the Company seal. This Power of Attorney is made and executed by authority of the following resolutions adopted by the Board of Directors of ATLANTIC SPECIALTY INSURANCE COMPANY on the twenty-fifth day of September, 2012:

Resolved: That the President, any Senior Vice President or Vice-President (each an "Authorized Officer") may execute for and in behalf of the Company any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, and affix the seal of the Company thereto; and that the Authorized Officer may appoint and authorize an Attorney-in-Fact to execute on behalf of the Company any and all such instruments and to affix the Company seal thereto; and that the Authorized Officer may at any time remove any such Attorney-in-Fact and revoke all power and authority given to any such Attorney-in-Fact.

Resolved: That the Attorney-in-Fact may be given full power and authority to execute for and in the name and on behalf of the Company any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, and any such instrument executed by any such Attorney-in-Fact shall be as binding upon the Company as if signed and sealed by an Authorized Officer and, further, the Attorney-in-Fact is hereby authorized to verify any affidavit required to be attached to bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof.

This power of attorney is signed and sealed by facsimile under the authority of the following Resolution adopted by the Board of Directors of ATLANTIC SPECIALTY INSURANCE COMPANY on the twenty-fifth day of September, 2012:

Resolved: That the signature of an Authorized Officer, the signature of the Secretary or the Assistant Secretary, and the Company seal may be affixed by facsimile to any power of attorney or to any certificate relating thereto appointing an Attorney-in-Fact for purposes only of executing and sealing any bond, undertaking, recognizance or other written obligation in the nature thereof, and any such signature and seal where so used, being hereby adopted by the Company as the original signature of such officer and the original seal of the Company, to be valid and binding upon the Company with the same force and effect as though manually affixed.

IN WITNESS WHEREOF, ATLANTIC SPECIALTY INSURANCE COMPANY has caused these presents to be signed by an Authorized Officer and the seal of the Company to be affixed this eighth day of December, 2014.

DRAFT

ATLANTIC SPECIALTY INSURANCE COMPANY CORPORATE SEAL 1986 NEW YORK

By _____
Paul J. Brehm, Senior Vice President

STATE OF MINNESOTA
HENNEPIN COUNTY

On this eighth day of December, 2014, before me personally came Paul J. Brehm, Senior Vice President of ATLANTIC SPECIALTY INSURANCE COMPANY, to me personally known to be the individual and officer described in and who executed the preceding instrument, and he acknowledged the execution of the same, and being by me duly sworn, that he is the said officer of the Company aforesaid, and that the seal affixed to the preceding instrument is the seal of said Company and that the said seal and the signature as such officer was duly affixed and subscribed to the said instrument by the authority and at the direction of the Company.

TARA JANELLE STAFFORD
NOTARY PUBLIC - MINNESOTA
My Commission Expires
January 31, 2020

_____
Notary Public

I, the undersigned, Assistant Secretary of ATLANTIC SPECIALTY INSURANCE COMPANY, a New York Corporation, do hereby certify that the foregoing power of attorney is in full force and has not been revoked, and the resolutions set forth above are now in force.

Signed and sealed. Dated 21 day of December, 2017

ATLANTIC SPECIALTY INSURANCE COMPANY CORPORATE SEAL 1986 NEW YORK

This Power of Attorney expires
October 1, 2019

_____
James G. Jordan, Assistant Secretary

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, 2017
(MONTH-DAY-YEAR)

and ending on June 30, 2018
(MONTH-DAY-YEAR)

Amount of bond $10,000.00

Description of bond Water Well Contractors & Drillers

DRAFT

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
Approved
Solid Waste Management Program
Approved By: Mark Wescott P.G. Digitally signed by Mark Wescott P.G. Date: 2024.01.19 12:45:38 -05'00'

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 May 04, 2017
(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. 7710213

American States Insurance Company
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 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, Brooke A. Sharp; Christine Doczy; D-Ann Kleidosty; Gary D. Eklund; Sharon J. Potts; Sylvia M. Ogle

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 4th day of April, 2017.

FIRST NATIONAL INSURANCE COMPANY OF AMERICA INCORPORATED 1928 NEW HAMPSHIRE
GENERAL INSURANCE COMPANY OF AMERICA INCORPORATED 1923 NEW HAMPSHIRE
SAFECO INSURANCE COMPANY OF AMERICA INCORPORATED 1953 NEW HAMPSHIRE
AMERICAN STATES INSURANCE COMPANY INCORPORATED 1929 INDIANA

American States Insurance Company
First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

By: David M. Carey
David M. Carey, Assistant Secretary

STATE OF PENNSYLVANIA ss
COUNTY OF MONTGOMERY

On this 4th day of April, 2017, 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.

DRAFT

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.

TERESA PASTELLA COMMONWEALTH OF PENNSYLVANIA NOTARY PUBLIC

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
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions 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, 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 4th day of May, 2017.

FIRST NATIONAL INSURANCE COMPANY OF AMERICA INCORPORATED 1928 NEW HAMPSHIRE
GENERAL INSURANCE COMPANY OF AMERICA INCORPORATED 1923 NEW HAMPSHIRE
SAFECO INSURANCE COMPANY OF AMERICA INCORPORATED 1953 NEW HAMPSHIRE
AMERICAN STATES INSURANCE COMPANY INCORPORATED 1929 INDIANA

By: Renee C. Llewellyn
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.

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**

DRAFT

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 L

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

COPY

Bond Number K08315607

Performance Bond For Water Well Contractors And Drillers

Name of Water Well Contractor or Driller Michael C. Rice/Cascade Drilling, L.P.

Know All Men By These Present

That we Michael C. Rice/Cascade Drilling, L.P. AND ANY AND ALL EMPLOYEES, OFFICERS AND PARTNERS, as Principal, and Westchester Fire Insurance Company 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.

DRAFT

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 9/20/13 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 20th day of, September 2013.

Michael C. Rice/Cascade Drilling, L.P.

PRINCIPAL, BY _____ (L.S.) TITLE: _____

Westchester Fire Insurance Company

SURETY BY: Roxana Palacios

Roxana Palacios, Attorney-in-Fact

GEORGIA REGISTERED AGENT N/A SEAL:

Revised December 2012

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**

DRAFT

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 L

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

COPY

CONTINUATION CERTIFICATE

Atlantic Specialty Insurance Company , Surety upon

a certain Bond No. **800031223**

dated effective June 30, 2017
(MONTH-DAY-YEAR)

on behalf of Michael C. Rice and Cascade Drilling, L.P., any and all employees, officers and partners
(PRINCIPAL)

and in favor of State of Georgia
(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, 2021
(MONTH-DAY-YEAR)

Amount of bond Thirty Thousand and Zero/100 ($30,000.00)

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
Approved
Solid Waste Management Program
Approved By: Mark Wescott P.G. Digitally signed by Mark Wescott P.G. Date: 2024.01.19 12:48:26 -05'00'

DRAFT

Description of bond Water Well Contractor Performance Bond

Premium: $1,200.00

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 May 9, 2019
(MONTH-DAY-YEAR)
Atlantic Specialty Insurance Company

By
Attorney-in-Fact Elizabeth R. Hahn

Parker, Smith & Feek, Inc.
Agent

2233 112th Ave NE Bellevue, WA 98004
Address of Agent

(425) 709-3600
Telephone Number of Agent

S-0157/GE 8/08

XDP

OneBeacon
INSURANCE GROUP

Power of Attorney

KNOW ALL MEN BY THESE PRESENTS, that ATLANTIC SPECIALTY INSURANCE COMPANY, a New York corporation with its principal office in Plymouth, Minnesota, does hereby constitute and appoint: **Deanna M. French, Susan B. Larson, Elizabeth R. Hahn, Jana M. Roy, Scott McGilvray, Mindee L. Rankin, Ronald J. Lange, John R. Claeys, Roger Kaltenbach, Guy Armfield, Scott Fisher, Andrew P. Larsen, Nicholas Fredrickson**, each individually if there be more than one named, its true and lawful Attorney-in-Fact, to make, execute, seal and deliver, for and on its behalf as surety, any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof; provided that no bond or undertaking executed under this authority shall exceed in amount the sum of: **sixty million dollars ($60,000,000)** and the execution of such bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof in pursuance of these presents, shall be as binding upon said Company as if they had been fully signed by an authorized officer of the Company and sealed with the Company seal. This Power of Attorney is made and executed by authority of the following resolutions adopted by the Board of Directors of ATLANTIC SPECIALTY INSURANCE COMPANY on the

Resolved: That the President, any Senior Vice President or Vice-President (each an "Authorized Officer") may execute for and in behalf of the Company any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, and affix the seal of the Company thereto; and that the Authorized Officer may appoint and authorize an Attorney-in-Fact to execute on behalf of the Company any and all such instruments and to affix the Company seal thereto; and that the Authorized Officer may at any time remove any such Attorney-in-Fact and revoke all power and authority given to any such Attorney-in-Fact.

Resolved: That the Attorney-in-Fact may be given full power and authority to execute for and in the name and on behalf of the Company any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, and any such instrument executed by any such Attorney-in-Fact shall be as binding upon the Company as if signed and sealed by an Authorized Officer and, further, the Attorney-in-Fact is hereby authorized to verify any affidavit required to be attached to bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof.

This power of attorney is signed and sealed by facsimile under the authority of the following Resolution adopted by the Board of Directors of ATLANTIC SPECIALTY INSURANCE COMPANY on the twenty-fifth day of September, 2012:

Resolved: That the signature of an Authorized Officer, the signature of the Secretary or the Assistant Secretary, and the Company seal may be affixed by facsimile to any power of attorney or to any certificate relating thereto appointing an Attorney-in-Fact for purposes only of executing and sealing any bond, undertaking, recognizance or other written obligation in the nature thereof, and any such signature and seal where so used, being hereby adopted by the Company as the original signature of such officer and the original seal of the Company, to be valid and binding upon the Company with the same force and effect as though manually affixed.

IN WITNESS WHEREOF, ATLANTIC SPECIALTY INSURANCE COMPANY has caused these presents to be signed by an Authorized Officer and the seal of the Company to be affixed this twenty-sixth day of October, 2017.

DRAFT

ATLANTIC SPECIALTY INSURANCE COMPANY CORPORATE SEAL 1986 NEW YORK

By _____
Paul J. Brehm, Senior Vice President

STATE OF MINNESOTA
HENNEPIN COUNTY

On this twenty-sixth day of October, 2017, before me personally came Paul J. Brehm, Senior Vice President of ATLANTIC SPECIALTY INSURANCE COMPANY, to me personally known to be the individual and officer described in and who executed the preceding instrument, and he acknowledged the execution of the same, and being by me duly sworn, that he is the said officer of the Company aforesaid, and that the seal affixed to the preceding instrument is the seal of said Company and that the said seal and the signature as such officer was duly affixed and subscribed to the said instrument by the authority and at the direction of the Company.

TARA JANELLE STAFFORD
NOTARY PUBLIC - MINNESOTA
My Commission Expires
January 31, 2020

_____
Notary Public

I, the undersigned, Secretary of ATLANTIC SPECIALTY INSURANCE COMPANY, a New York Corporation, do hereby certify that the foregoing power of attorney is in full force and has not been revoked, and the resolutions set forth above are now in force.

Signed and sealed. Dated 9 day of May 2019

ATLANTIC SPECIALTY INSURANCE COMPANY CORPORATE SEAL 1986 NEW YORK

This Power of Attorney expires
October 1, 2019

_____
Christopher V. Jerry, Secretary

Bond Number 1001126889

Performance Bond For Drillers

Name of Driller Phillip Pitts and Stan White

Know All Men By These Presents

That we Phillip Pitts and Stan White and _____ Thompson Engineering, Inc. any and all employees, officers and partners (collectively hereinafter, **Principal**), and we American Contractors Indemnity Company, duly organized under the laws of the State of California (hereinafter, **Surety**), are held and firmly bound unto the Director of the Environmental Protection Division, Department of Natural Resources, State of Georgia (**Director**) and his or her Successor or Successors in office, as **Obligee**, in the full sum of **FIFTEEN THOUSAND DOLLARS ($15,000.00)** for the payment of which will and truly to be made, the Principal and Surety bind ourselves, our heirs, administrators, successors and assigns, jointly and severally, by these presents.

WHEREAS, the Water Well Standards Act of 1985 (O.C.G.A. §§ 12-5-120 *et seq.*) (the Act) requires that a Driller, as that term is defined by the Act, have a performance bond 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 it shall remain in 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 the 1st day of November, 2018 and shall continue in effect until June 30, 2019, unless sooner terminated by mutual agreement of Principal and Surety, provided that no such termination may be made unless sixty (60) days' prior written notice is made to the Director. In the event of such termination, the rights of the Director as Obligee and beneficiaries under this bond which arose prior to such termination shall continue.

IN WITNESS THEREOF the Principal and Surety have caused these present to be duly signed and sealed, this the 26th day of February, 2019.

Principal
Thompson Engineering, Inc.

Print name: Chad R. Brown
Title: CLO + Secretary

Seal:

Surety
American Contractors Indemnity Company

Print name: Dewey Brashier
Title: Attorney-in-Fact

Seal:

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Approved
Solid Waste Management Program

Approved By: Mark Wescott P.G. Digitally signed by Mark Wescott P.G. Date: 2024.01.19 12:50:05 -05'00'

Revised March 2017

TOKIO MARINE HCC

POWER OF ATTORNEY

AMERICAN CONTRACTORS INDEMNITY COMPANY TEXAS BONDING COMPANY
UNITED STATES SURETY COMPANY U.S. SPECIALTY INSURANCE COMPANY

KNOW ALL MEN BY THESE PRESENTS: That American Contractors Indemnity Company, a California corporation, Texas Bonding Company, an assumed name of American Contractors Indemnity Company, United States Surety Company, a M aryland corporation and U.S. Specialty Insurance Company, a Texas corporation (collectively, the "Companies"), do by these presents make, constitute and appoint:

Jim E. Brashier, Troy P. Wagener, Loren Richard Howell, Jr., Dewey Brashier,
Kathleen B. Scarborough, Susan Skrmetta, John W. Nance

its true and lawful Attorney(s)-in-fact, each in their separate capacity if more than one is named above, with full power and authority hereby conferred in its name, place and stead, to execute, acknowledge and deliver **any and all bonds, recognizances, undertakings or other instruments or contracts of suretyship to include riders, amendments, and consents of surety, providing the bond penalty does not exceed** ******Unlimited****** Dollars (***unlimited***). This Power of Attorney shall expire without further action on April 23rd, 2022. This Power of Attorney is granted under and by authority of the following resolutions adopted by the Boards of Directors of the Companies:

Be it Resolved, that the President, any Vice-President, any Assistant Vice-President, any Secretary or any Assistant Secretary shall be and is hereby vested with full power and authority to appoint any one or more suitable persons as Attorney(s)-in-Fact to represent and act for and on behalf of the Company subject to the following provisions:

Attorney-in-Fact may be given full power and authority for and in the name of and on behalf of the Company, to execute, acknowledge and deliver, any and all bonds, recognizances, contracts, agreements or indemnity and other conditional or obligatory undertakings, including any and all consents for the release of retained percentages and/or final estimates on engineering and construction contracts, and any and all notices and documents canceling or terminating the Company's liability thereunder, and any such instruments so executed by any such Attorney-in-Fact shall be binding upon the Company as if signed by the President and sealed and effected by the Corporate Secretary.

Be it Resolved, that the signature of any authorized officer and seal of the Company heretofore or hereafter affixed to any power of attorney or any certificate relating thereto by facsimile, and any power of attorney or certificate bearing facsimile signature or facsimile seal shall be valid and binding upon the Company with respect to any bond or undertaking to which it is attached.

IN WITNESS WHEREOF, The Companies have caused this instrument to be signed and their corporate seals to be hereto affixed, this 1st day of June, 2018.

AMERICAN CONTRACTORS INDEMNITY COMPANY TEXAS BONDING OMPANY
UNITED STATES SURETY COMPANY U.S. SPECIALTY INSURANCE COMPANY

State of California

County of Los Angeles

By: _____
Daniel P. Aguilar, Vice President

A Notary Public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document

On this 1st day of June, 2018, before me, Sonia O. Carrejo, a notary public, personally appeared Daniel P. Aguilar, Vice President of American Contractors Indemnity Company, Texas Bonding Company, United States Surety Company and U.S. Specialty Insurance Company who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____ (seal)

SONIA O. CARREJO
Notary Public - California
Los Angeles County
Commission # 2239479
My Comm. Expires Apr 23, 2022

I, Kio Lo, Assistant Secretary of American Contractors Indemnity Company, Texas Bonding Company, United States Surety Company and U.S. Specialty Insurance Company, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney, executed by said Companies, which is still in full force and effect; furthermore, the resolutions of the Boards of Directors, set out in the Power of Attorney are in full force and effect.

In Witness Whereof, I have hereunto set my hand and affixed the seals of said Companies at Los Angeles, California this 26th day of February, 2019.

Corporate Seals
Bond No. 1001126889

Agency No. 17033

_____
Kio Lo, Assistant Secretary

HCCSMANPOA06/2018

visit tmhcc.com/surety for more information

SURVEYOR CERTIFICATION

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 Branch in Milledgeville, 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.

DRAFT

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

GEORGIA REGISTERED NO. LS002543 PROFESSIONAL LAND SURVEYOR JAMES RANDOLPH GREEN

Date: 7/23/20

GEORGIA DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
Approved
Solid Waste Management Program
Approved By: Mark Wescott P.G. Digitally signed by Mark Wescott P.G. Date: 2024.01.19 12:50:44 -05'00'

GEL ENGINEERING OF NC INC

Plant Branch Monitoring Wells

Field Surveys: 9/26/2022-9/26/2022

Well ID	Casing Northing	Casing Easting	Top of Casing Elevation	Nail or Pad Northing	Nail or Pad Easting	Nail or Pad Elevation	Description
BRLFC-01	1162232.420	2557158.878	381.35	1162234.588	2557160.953	378.49	NAIL
BRLFC-02	1161957.831	2556825.523	384.13	1161957.141	2556824.248	381.63	NAIL
BRLFC-03	1162377.227	2556336.547	369.42	1162377.112	2556337.910	366.38	NAIL
BRLFC-04	1163049.095	2556365.006	388.42	1163047.818	2556364.818	385.43	NAIL
BRLFC-05	1163451.177	2556075.022	383.62	1163450.615	2556074.153	380.81	NAIL
BRLFC-06	1163851.241	2555822.506	397.85	1163852.017	2555823.832	391.96	NAIL
BRLFC-07	1164341.769	2555739.634	409.69	1164340.724	2555739.503	407.00	NAIL
BRLFC-08	1164864.460	2555903.702	400.44	1164863.290	2555903.253	397.72	NAIL
BRLFC-09	1165226.617	2556252.713	394.45	1165227.164	2556251.549	391.52	NAIL
BRLFC-10	1165147.934	2556780.479	415.79	1165146.733	2556780.432	412.83	NAIL
BRLFC-11	1164949.835	2557269.423	386.84	1164951.153	2557269.792	383.90	NAIL
BRLFC-12	1164623.001	2557646.354	379.92	1164622.609	2557645.281	376.87	NAIL
BRLFC-13	1164323.879	2557823.208	389.26	1164324.574	2557822.015	386.55	NAIL
BRLFC-14	1164274.064	2558403.895	384.99	1164274.959	2558404.532	382.29	NAIL
BRLFC-15	1164224.277	2558938.713	398.64	1164225.422	2558939.234	395.98	NAIL
BRLFC-16	1163744.066	2558875.358	418.68	1163743.046	2558876.074	416.10	NAIL
PZ-64I	1161787.721	2562404.290	381.94	1161790.008	2562403.066	379.37	NAIL
PZ-65I	1161692.719	2562240.567	382.06	1161693.105	2562242.972	379.61	NAIL
PZ-66I	1161747.912	2562134.650	383.52	1161747.859	2562137.193	380.86	NAIL
PZ-67	1161831.975	2561919.762	381.48	1161832.305	2561922.342	378.78	NAIL
PZ-68D	1160690.480	2558512.904	405.25	1160689.686	2558515.174	402.50	NAIL
PZ-69I	1160311.386	2558447.455	379.36	1160312.091	2558444.956	376.97	NAIL
PZ-70I	1164326.658	2555374.075	425.70	1164327.641	2555373.457	422.88	NAIL
PB-D01	1162230.144	2557916.814	400.83	N/A	N/A	N/A	BORING
PB-D02	1162246.300	2558208.403	402.96	N/A	N/A	N/A	BORING
PB-D03	1162358.679	2559046.329	408.09	N/A	N/A	N/A	BORING
PB-D04	1161913.252	2558507.940	403.12	N/A	N/A	N/A	BORING
PB-D05	1161840.817	2558094.790	399.40	N/A	N/A	N/A	BORING
PB-D06	1161478.306	2558295.128	399.53	N/A	N/A	N/A	BORING
SB-33S	1168079.825	2554050.908	414.87	N/A	N/A	N/A	BORING
SB-38S	1164375.049	2554988.232	430.68	N/A	N/A	N/A	BORING

Benchmark	Northing	Easting	Elevation
GEL1	1162581.977	2556743.623	391.46
GEL2	1161860.379	2562295.003	380.25

SURVEY DATA CERTIFICATION FOR SOUTHERN COMPANY TO DETERMINE NORTHING, EASTING, AND VERTICAL ELEVATION OF THE NAIL IN THE CONCRETE PAD & THE PVC WELL CASING. DATE OF FIELD SURVEY & INSPECTION: 09/26/2022-09/28/2022. FIELD SURVEY POSITIONAL TOLERANCE=0.5 FEET HORIZONTAL-NAD'83, 0.01 VERTICAL-NAVD '88. EQUIPMENT USED FOR HORIZONTAL LOCATION: TRIMBLE R10 & R12 RTK GPS & TRIMBLE S5 ROBOTIC TOTAL STATION. THE VERTICAL LOCATION OF EACH SURVEYED POINT WAS ESTABLISHED BASED UPON LEVEL RUNS WITH A DIGITAL LEVEL LOOP FROM VERTICAL CONTROL ESTABLISHED BY ON-SITE BENCHMARKS GEL1 & GEL2 SET BY GEL SOLUTIONS USING A TRIMBLE DINI LEVEL

10/3/2022

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
Approved
Solid Waste Management Program
Approved By: Mark Wescott P.G. Digitally signed by Mark Wescott P.G. Date: 2024.01.19 12:51:20 -05'00'

NORTH CAROLINA
GEL ENGINEERING OF NC, INC. NO. C-1938
CERTIFICATE OF AUTHORIZATION

GEORGIA
REGISTERED
No. LS003464
PROFESSIONAL
LAND SURVEYOR
JOHN DEREK BRADNER

COA - LS003119
Exp. 12/31/2022

GEL ENGINEERING OF NC INC

Plant Branch Monitoring Wells

Field Surveys: 11/28/2022-11/29/2022

Well ID	Casing Northing	Casing Easting	Top of Casing Elevation	Nail or Pad Northing	Nail or Pad Easting	Nail or Pad Elevation	Description
BRLFC-10(NEW)	1165215.376	2556788.955	386.07	1165216.371	2556789.750	383.02	NAIL
BRLFC-11(NEW)	1164980.793	2557271.686	384.46	1164981.894	2557272.144	381.30	NAIL
BRLFC-15(NEW)	1164221.170	2558948.765	399.33	1164222.446	2558949.193	396.20	NAIL
BRLFC-16(NEW)	1163735.779	2558883.992	419.59	1163734.827	2558884.867	416.77	NAIL

Benchmark	Northing	Easting	Elevation
GEL1	1162581.977	2556743.623	391.46
GEL2	1161860.379	2562295.003	380.25

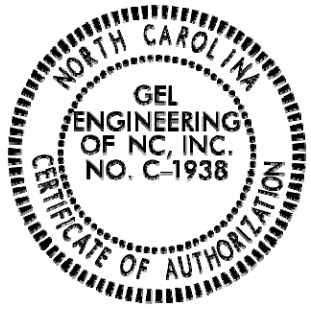
SURVEY DATA CERTIFICATION FOR SOUTHERN COMPANY TO DETERMINE NORTHING, EASTING, AND VERTICAL ELEVATION OF THE NAIL IN THE CONCRETE PAD & THE PVC WELL CASING. DATE OF FIELD SURVEY & INSPECTION: 011/28/2022-11/29/2022. FIELD SURVEY POSITIONAL TOLERANCE=0.5 FEET HORIZONTAL-NAD'83, 0.01 VERTICAL-NAVD '88. EQUIPMENT USED FOR HORIZONTAL LOCATION: TRIMBLE R10 & R12 RTK GPS & TRIMBLE S5 ROBOTIC TOTAL STATION. THE VERTICAL LOCATION OF EACH SURVEYED POINT WAS ESTABLISHED BASED UPON LEVEL RUNS WITH A DIGITAL LEVEL LOOP FROM VERTICAL CONTROL ESTABLISHED BY ON-SITE BENCHMARKS GEL1 & GEL2 SET BY GEL SOLUTIONS USING A TRIMBLE DINI LEVEL

11/30/2022

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
Approved
Solid Waste Management Program
Approved By: Mark Wescott P.G. Digitally signed by Mark Wescott P.G. Date: 2024.01.19 12:52:20 -05'00'

GEORGIA REGISTERED No. LS003464 PROFESSIONAL LAND SURVEYOR JOHN DEREK BRADNER

COA - LS003119
Exp. 12/31/2022


NORTH CAROLINA
GEL
ENGINEERING
OF NC, INC.
NO. C-1938
CERTIFICATE OF AUTHORIZATION

BORING LOGS

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Approved

Solid Waste Management Program

Approved By: Mark Wescott P.G. Digitally signed by Mark Wescott P.G. Date: 2024.01.19 12:53:12 -05'00'

Location resurveyed June - July 2020

BORING BRGWA-2S/PZ-02 S

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Branch Hydrogeologic Study

LOCATION Milledgeville, GA

DATE STARTED 4/2/2014 **COMPLETED** 4/2/2014 **GROUND ELEVATION** 440.4 ft **COORDINATES** N 1167139.7 E 2549952.6

CONTRACTOR SCS Field Services **METHOD** Hollow Stem Auger **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** W. Shaughnessy **CHECKED BY** _____ **BORING DEPTH** 44.6 ft.

GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** 10.2 ft. after 288 hrs.

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Natural Gamma (75 / 150 / 225)	WELL DATA (Top of casing Elev. = 443.20)
0			440.4		
5		See PZ-02 I for material descriptions			
10		▼			
15					
20					
25					
30					Annular Seal
35					Filter Pack
40					
					Screen Tip

Bottom of borehole at 44.6 feet.

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 10/29/20 14:45 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\PLANT BRANCH PIEZOMETERS.GPJ

Location resurveyed June - July 2020

BORING BRGWA-5S/PZ-05 S

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Branch Hydrogeologic Study
LOCATION Milledgeville, GA

DATE STARTED 4/3/2014 **COMPLETED** 4/3/2014 **GROUND ELEVATION** 440.8 ft **COORDINATES** N 1170177.5 E 2549415.5

CONTRACTOR SCS Field Services **METHOD** Hollow Stem Auger **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** W. Shaughnessy **CHECKED BY** _____ **BORING DEPTH** 40 ft.

GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** 10 ft. after 250 hrs.

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Natural Gamma (75 / 150 / 225)	WELL DATA (Top of casing Elev. = 443.86)
0			440.8		
5		See PZ-05 I for material descriptionsSee PZ-5 I for material descriptions			
10		▼			
15					
20					
25					Annular Seal
30					Filter Pack
35					
40		Bottom of borehole at 40.0 feet.			Screen Tip Elevation

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 10/29/20 14:45 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\PLANT BRANCH PIEZOMETERS.GPJ

Location resurveyed June - July 2020

BORING BRGWA-6S/PZ-06 S

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Branch Hydrogeologic Study
LOCATION Milledgeville, GA

DATE STARTED 4/1/2014 **COMPLETED** 4/1/2014 **GROUND ELEVATION** 455.8 ft **COORDINATES** N 1170732.9 E 2551540.8

CONTRACTOR SCS Field Services **METHOD** Hollow Stem Auger **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** W. Shaughnessy **CHECKED BY** _____ **BORING DEPTH** 51 ft.

GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** 24.9 ft. after 300 hrs.

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Natural Gamma (75 / 150 / 225)	WELL DATA (Top of casing Elev. = 458.96)
			455.8		
5		residuum dry, very stiff, CLAY, red			
10		residuum dry, medium stiff, silty CLAY, red with yellow-red mottles			
			442.8		
15		saprolite dry, medium stiff, clayey SILT, red with red-yellow and black mottles, micas			
20		saprolite dry, medium stiff, clayey SILT, red with red-yellow and black mottles, micas			
			431.8		
25		saprolite wet, soft, clayey SILT, brown-yellow with black mottles, micas			
30		saprolite wet, soft, clayey SILT, brown-yellow with black mottles, micas			
35		saprolite wet, medium stiff, clayey SILT, brown-yellow with black mottles, micas			Annular Seal
40		saprolite wet, medium stiff, clayey SILT, brown-yellow with black mottles, micas			Filter Pack
45					

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 10/29/20 14:45 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\PLANT BRANCH PIEZOMETERS.GPJ

(Continued Next Page)

Location resurveyed June - July 2020

SOUTHERN COMPANY

BORING LOG

BORING BRGWA-6S/PZ-06 S

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Branch Hydrogeologic Study
LOCATION Milledgeville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Natural Gamma (75 / 150 / 225)	WELL DATA
			455.8		Top of casing Elev. = 458.96 (CONTINUED)
		saprolite wet, stiff, clayey SILT, olive-yellow with gray mottles, sand *(Con't)*			
50					**Screen Tip Elevation**
		saprolite wet, medium stiff, clayey SILT, olive-gray with brown mottles	404.8		
		Bottom of borehole at 51.0 feet.			

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 10/29/20 14:45 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\PLANT BRANCH PIEZOMETERS.GPJ

Location resurveyed June - July 2020

BORING BRGWA-12S/PZ-12 S

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Branch Hydrogeologic Study
LOCATION Milledgeville, GA

DATE STARTED 3/4/2014 **COMPLETED** 3/4/2014 **GROUND ELEVATION** 431.6 ft **COORDINATES** N 1164286.6 E 2557142.9

CONTRACTOR SCS Field Services **METHOD** Hollow Stem Auger; Casing Advance **EQUIPMENT** CME 550

DRILLED BY T. Milam **LOGGED BY** W. Shaughnessy **CHECKED BY** _____ **BORING DEPTH** 58.3 ft.

GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** 47.5 ft. after 300 hrs.

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Natural Gamma (75 / 150 / 225)	WELL DATA (Top of casing Elev. = 434.64)
			431.6		
5		See PZ-12 D and PZ-12 I for material descriptions			
10					
15					
20					
25					
30					
35					
40					Annular Seal
45					

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 10/29/20 14:45 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\PLANT BRANCH PIEZOMETERS.GPJ

(Continued Next Page)

Location resurveyed June - July 2020

BORING BRGWA-12S/PZ-12 S

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Branch Hydrogeologic Study

LOCATION Milledgeville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Natural Gamma (75 / 150 / 225)	WELL DATA
			431.6		Top of casing Elev. = 434.64 (CONTINUED)
50					Filter Pack
55					Screen Tip Elevation
		Bottom of borehole at 58.3 feet.			

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 10/29/20 14:45 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\PLANT BRANCH PIEZOMETERS.GPJ

Location resurveyed June - July 2020

SOUTHERN COMPANY

BORING LOG

BORING BRGWA-12I/PZ-12 I

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Branch Hydrogeologic Study
LOCATION Milledgeville, GA

DATE STARTED 2/20/2014 **COMPLETED** 2/20/2014 **GROUND ELEVATION** 431.5 ft **COORDINATES** N 1164301.2 E 2557138.9
CONTRACTOR SCS Field Services **METHOD** Hollow Stem Auger; Casing Advance; HQ Coring **EQUIPMENT** CME 550
DRILLED BY T. Milam **LOGGED BY** W. Shaughnessy **CHECKED BY** _____ **BORING DEPTH** 77.6 ft.
GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** 47.4 ft. after 240 hrs.
NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Natural Gamma (75 / 150 / 225)	WELL DATA
			431.5		Top of casing Elev. = 434.39
5		dry, very stiff, sandy CLAY, red with yellow-red mottles, micas			
10		dry, very stiff, sandy CLAY, red with yellow-red mottles, micas			
15		dry, very stiff, silty CLAY, yellow-red with gray-brown mottles, sand, micas			
			413.5		
20		dry, stiff, clayey SILT, red and pink with yellow and yellow-brown mottles, sand, micas			
25		dry, medium dense, clayey SILT, brown-yellow with red mottles, white mottles, black mottles, micas			
30		damp, medium dense, clayey SILT, strong brown and pink with red and white mottles, micas			
35		damp, stiff, clayey SILT, yellow-red with black mottles, sand, micas			
40		damp, stiff, clayey SILT, pale brown with white mottles, sand, micas			
45					

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 10/29/20 14:45 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\PLANT BRANCH PIEZOMETERS.GPJ

(Continued Next Page)

SOUTHERN COMPANY

BORING LOG

BORING BRGWA-12I/PZ-12 I

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Branch Hydrogeologic Study
LOCATION Milledgeville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION
		damp, stiff, clayey SILT, pale brown with white and red mottles, sand, micas *(Con't)*	431.5
50		wet, stiff, clayey SILT, wery pale brown with white mottles, sand, micas	
55		wet, hard, clayey SILT, pale brown with white mottles, sand, micas	
60		wet, hard, sandy SILT, hard, pale gray-brown, micas	
65		wet, hard, sandy SILT, light olive-brown, micas	366.8
		Felsic biotite GNEISS medium to coarse grain, moderately weathered, flow banded, numerous fractures, dark gray, black-white banding, feldspar, quartz, biotite	
70		medium to coarse grain, not weathered, flow banded, few fractures, distinct black-white banding, feldspar, quartz, biotite, felspar phenocrysts	
75		medium to coarse grain, not weathered, flow banded, few fractures, distinct black-white banding, feldspar, quartz, biotite, felspar phenocrysts	353.9

Bottom of borehole at 77.6 feet.

Natural Gamma
75 150 225

WELL DATA
Top of casing Elev. = 434.39
(CONTINUED)

Annular Seal
Filter Pack
Screen Tip Elevation

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 10/29/20 14:45 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\PLANT BRANCH PIEZOMETERS.GPJ

Location resurveyed June - July 2020

RECORD OF BOREHOLE PZ-23S/BRGWA-23S

SHEET 1 of 1

PROJECT: SCS Plant Branch
PROJECT NUMBER: 166-0939
DRILLED DEPTH: 41.00 ft
LOCATION: Milledgville, GA

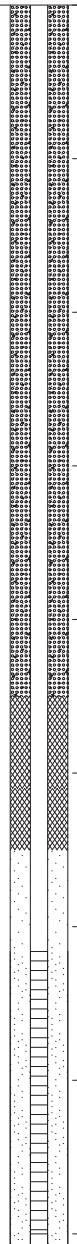
DRILL RIG: Mini-Sonic Track Mounted Rig
DATE STARTED: 7/25/16
DATE COMPLETED: 7/26/16

NORTHING: 1,162,971.70
EASTING: 2,557,868.10
GS ELEVATION: 425.5
TOC ELEVATION: 428.24 ft

DEPTH W.L.: 27.2
ELEVATION W.L.: 401.22
DATE W.L.: 7/25/16
TIME W.L.: na

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
0	425	0.00 - 5.00 SILT, NP, reddish brown, white mottling, highly weathered, massive, friable, relic foliation structure micaceous, SAPROLITE; cohesive, dry, very stiff	ML	420.5	1		5.00 / 5.00
5	420	5.00 - 19.00 SILT, low plasticity; reddish brown, white mottling, massive, semi-friable, micaceous, SAPROLITE; cohesive, moist, soft		5.00	2		5.00 / 5.00
10	415				3		5.00 / 5.00
15	410			406.5	4		5.00 / 5.00
20	405	19.00 - 20.00 trace fine-coarse subangular sand, pinkish brown 20.00 - 28.00 NP, well graded; reddish brown, light brown, dark grey, white mottling , moderately weathered, massive, micaceous, SAPROLITE; cohesive, moist, very soft		19.00 405.5 20.00	5		5.00 / 5.00
25	400			397.5	6		5.00 / 5.00
30	395	28.00 - 31.40 silty SAND, fine grained sand, NP, trace coarse subangular grain sand; reddish brown, white mottling, moderately weathered, massive, micaceous, SAPROLITE; cohesive, moist, very soft	SM	28.00 394.1			
35	390	31.40 - 35.00 SAND, poorly graded, very fine grained, few silt, trace subangular medium grain sand; light grey, brown, white mottling, medium weathered, massive, micaceous, SAPROLITE; non-cohesive, moist, loose	SP	31.40 390.5	7		5.00 / 5.00
		35.00 - 37.00 SAND, poorly graded, fine grained, trace silt; light grey brown, white mottling, highly weathered quartz nodules, heterogenous, micaceous, SAPROLITE; NC, moist-wet, very loose		35.00 388.5	8		2.00 / 2.00
40	385	37.00 - 40.50 TRANSITIONALLY WEATHERED ROCK, biotite GNEISS, moderately weathered, banded , dark grey, coarsely crystalline, strong rock, iron oxide staining, Sand part of weathered matrix	TWR	37.00 385	9		4.00 / 4.00
		40.50 - 41.00 BEDROCK, biotite GNEISS, slightly weathered, banded, grey to light tan, medium crystalline, highly competent rock	GNEISS				
45	380	Boring completed at 41.00 ft					
50							

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-30.8'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 30.8'-40.8'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 27.5'-40.0'
Type: 27.5'-28.5', 30/45 fine sand; 28.5'-40.0', #1 sand

FILTER PACK SEAL
Interval: 22.5'-27.5'
Type: 22.5'-25.5', 3/8" Bentonite Chips; 25.5'-27.5', Bentonite Pellets

ANNULUS SEAL
Interval: 2.0'-22.5'
Type: Portland Cement (Type I)

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

DRILLING METHODS
Soil Drill: 4-inch Sonic
Rock Drill: 4-inch Sonic

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Scotty Vermillon

GA INSPECTOR: Will Ethier
CHECKED BY: Rachel P. Kirkman, P.G.
DATE: 9/15/16

GOLDER

BOREHOLE RECORD PLANT BRANCH LOGS2_SURVEY UPDATED.GPJ PIEDMONT.GDT 8/20/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE PZ-30I/BRGWC-30I

SHEET 1 of 1

PROJECT: SCS Plant Branch
PROJECT NUMBER: 166-0939
DRILLED DEPTH: 20.25 ft
LOCATION: Milledgville, GA

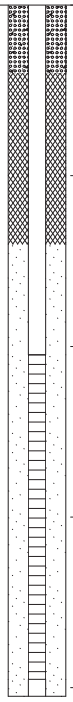
DRILL RIG: Mini-Sonic Track Mounted Rig
DATE STARTED: 7/18/16
DATE COMPLETED: 7/18/16

NORTHING: 1,161,607.60
EASTING: 2,557,691.80
GS ELEVATION: 350.0
TOC ELEVATION: 352.61 ft

DEPTH W.L.: 1.55
ELEVATION W.L.: 350.78
DATE W.L.: 7/20/2016
TIME W.L.: 08:57

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
0	350	0.00 - 4.70 Sandy CLAYEY SILT, low plasticity fines, fine to medium sub-angular sand, trace organics (roots); moderate reddish brown (10YR 4/6), cohesive, w<PL, soft	ML	345.3			
5	345	4.70 - 6.60 Sandy SILTY CLAY, medium plasticity fines, fine sand; grayish blue green (5BG 5/2) to light blue gray (5B 7/1) mottled with moderate yellowish brown (10YR 5/4) and white (N9), cohesive, w~PL, firm	CL	4.70 343.4	1		8.00 10.00
		6.60 - 6.80 SAND, fine to medium sub-angular sand, non-plastic fines; greenish gray (5G 6/1) to pale olive (10Y 6/2), non-cohesive, moist, loose	SP CL	342.6 7.40			
		6.80 - 7.40 Sandy SILTY CLAY, medium plasticity fines, fine sand; grayish blue green (5BG 5/2) to light blue gray (5B 7/1) mottled with moderate yellowish brown (10YR 5/4) and white (N9), cohesive, w~PL, firm	SM	339.5			
10	340	7.40 - 10.50 SILTY SAND, fine to coarse well graded sub-angular sand, low plasticity fines, trace fine sub-angular gravels; dark yellowish orange (10YR 6/6) to very pale orange (10YR 8/2), SAPROLITE; non-cohesive, moist, compact	SP SP-SM	338.9 11.10			
		10.50 - 11.10 SAND, fine to medium sub-angular sand, trace non-plastic fines, trace fine angular gravels; dusky brown (5YR 2/2) to moderate brown (5YR 4/4), highly weathered (W4), quartz, biotite, and weathered micaceous grains, SAPROLITE; non-cohesive, moist, dense		336.1	2		7.00 7.00
15	335	11.10 - 13.90 SAND, fine angular sand, some non-plastic fines, trace fine angular gravels; dark yellowish orange (10YR 6/6) and grayish orange (10YR 7/4), highly weathered (W$4, weathered micaceous grains, quartz, and biotite, SAPROLITE; non-cohesive, wet, very dense	SW TWR GNEISS	13.90 334.6 15.80 333.2 16.80			
		13.90 - 15.40 SAND, fine to coarse angular sand, trace non-plastic fines, some fine to coarse soft angular gravel (core stones); moderate yellowish brown (10YR 5/4) mottled white (N9) and pale olive (10YR 6/2), moderately to highly weathered (W3 to W4), weathered micaceous grains, quartz, plagioclase, biotite, SAPROLITE; non-cohesive, wet, very dense		330 20.00	3		2.80 3.00
20	330	15.40 - 15.80 TRANSITIONALLY WEATHERED ROCK, fine to coarse angular sand, fine to coarse angular gravels (core stones), trace non-plastic fines; light gray (N7), slightly to moderately weathered (W2-W3), quartz, biotite and weathered micaceous grains, non-cohesive, wet, very dense					
25	325	15.80 - 16.80 Slightly weathered (W2), medium bedded, light olive gray (5Y 5/2) to medium light gray (N7), fine grained, slightly porous, weak rock (R2), GNIESS, some weathering staining, quartz, biotite and weathered micaceous grains.					
30	320	16.80 - 20.00 Slightly weathered (W2), medium to thinly wavy foliated, medium to coarse grained, white (N1) and grayish black (N2) with some dark yellowish orange (10YR 6/6) weathered surfaces, slightly porous (fracture surfaces), medium strong to strong (R3 to R4), BIOTITE GNIESS, with biotite, quartz, hornblende, frequent weathering surfaces 17.00: (17.0) fresh (W1), occasional weathered surfaces					
		Boring completed at 20.25 ft					
35	315						
40	310						
45	305						

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-10'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 10'-20'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 7.0'-20.25'
Type: 7.0'-8.0' 30/45 Sand - 8.0'-20.25' #1 Sand

FILTER PACK SEAL
Interval: 2.0'-7.0'
Type: 2.0'-5.0' 3/8" Bentonite Chips - 5.0'-7.0' 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0'-2'
Type: Concrete

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

DRILLING METHODS
Soil Drill: 4-inch Sonic
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Trenton Herod

GA INSPECTOR: Jeffrey Ingram
CHECKED BY: Rachel P. Kirkman, P.G.
DATE: 9/15/16

GOLDER

BOREHOLE RECORD PLANT BRANCH LOGS_SURVEY UPDATED.GPJ PIEDMONT.GDT 8/20/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE PZ-32S/BRGWC-32S

SHEET 1 of 2

PROJECT: SCS Plant Branch
PROJECT NUMBER: 166-0939
DRILLED DEPTH: 45.00 ft
LOCATION: Milledgville, GA

DRILL RIG: TS-150 Track Mounted Rig
DATE STARTED: 7/19/16
DATE COMPLETED: 7/20/16

NORTHING: 1,160,677.70
EASTING: 2,558,497.90
GS ELEVATION: 403.6
TOC ELEVATION: 406.39 ft

DEPTH W.L.: 30.05
ELEVATION W.L.: 322.28
DATE W.L.: 7/22/2016
TIME W.L.: 08:00

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		0.00 - 0.70 TOPSOIL, SILTY SAND, fine poorly graded sand, non-plastic fines, some organics (roots); dark yellowish brown (10YR 4/2); non-cohesive, dry, loose	SM		402.9 0.70					
		0.70 - 8.30 non-plastic to low plasticity fines, trace organics (roots); moderate reddish brown (10R 4/6), completely weathered (W5), some weathered micaceous grains, SAPROLITE; non-cohesive, moist, loose								
5	400					1		8.80 10.00		
					395.3					
	395	8.30 - 17.90 fine to coarse well graded angular sand, non-plastic to low plasticity fines, some fine to coarse soft angular gravels (core stones); pale yellowish brown (10YR 6/2), light brown (5YR 5/6) and black (N1), highly to completely weathered (W4 to W5), some relic foliations in core stones, weathered micaceous grains, quartz, biotite, SAPROLITE; non-cohesive, moist, compact			8.30					
10										
	390					2		7.90 10.00	Portland Cement – (Type II)	
15					385.7					
		17.90 - 19.10 fine to coarse well graded angular sand, non-plastic to low plasticity fines, some fine to coarse soft angular gravels (core stones); layers of dark yellowish orange (10YR 6/6), pale yellowish brown (10YR 6/2), pale reddish brown (10R 5/4) mottled black (N1) and white (N9), highly weathered (W4), some relic foliaitions in core stones, weathered micaceous grains, biotite, quartz, SAPROLITE; non-cohesive, moist, compact			17.90 384.5 19.10					
	385									
20		19.10 - 28.50 (SP-SM) SAND, fine to coarse sub-angular sand, non-plastic to low plasticity fines, some soft angular gravels (core stones); pale yellowish brown (10YR 6/2), white (N9), and black (N1), highly weathered (W4), some relic foliaitions in core stones, weathered micausous grains, biotite, quartz, SAPROLITE; non-cohesive, moist, Dense 25.00: (25.0) some white (N9) fresh quartz pockets	SP-SM			3		10.00 10.00		
	380									
25					375.1					
		28.50 - 30.00 SILTY SAND, fine to medium sub-angular poorly graded sand, non-plastic to low plasticity fines; light brown (5YR 5/6) black (N1), and pale yellowish brown (10YR 6/2), highly weathered (W4), some relic foliations, biotite, quartz, weathered micaceous grains, SAPROLITE; non-cohesive, moist, dense	SM		28.50 373.6				3/8" Bentonite – Chips	
	375		SC		30.00 371.6				3/8" Bentonite – Pellets	
30		30.00 - 32.00 CLAYEY SAND, fine sand, medium plasticity fines; pale yellowish brown (10YR 6/2), to light olive gray (5Y 5/2) mottled black (N1) and white (N9), some relict foliations, weathered micaceous grains, biotite, quartz, SAPROLITE; cohesive, w~PL, hard			32.00				30/45 Sand –	
	370								#1 Sand –	
35		32.00 - 38.70 SAND, fine sand, non-plastic fines; light brown (5YR 5/6), black (N1) and pale yellowish brown (10YR 6/2), highly weathered (W4), weathered micaceous grains, SAPROLITE; non-cohesive, wet, loose	SP-SM			4		10.00 10.00		
	365				364.9					
		38.70 - 40.00 SAND, fine to coarse sub-angular sand, trace non-plastic fines; pale yellowish brown (10YR 6/2) mottled white (N9) and Black (N1), moderately weathered (W3), some foliation layers, SAPROLITE; non-cohesive, wet, dense	SW		38.70 363.6				0.010" Screen Slot	
40		40.00 - 42.50 SANDY SILT, fine sand, low plasticity fines; light olive gray (5Y 5/2), completely weathered rock (W6), weathered micaceous grains, biotite, quartz, SAPROLITE; cohesive, w>PL, firm	ML		40.00 361.1	5		5.00 5.15		
	360	42.50 - 45.00 SAND, fine to medium angular sand, trace non-plastic fines; pale yellowish brown (10YR 6/2), some relict foliations, weathered	SP		42.50 358.6					
45		Log continued on next page								

WELL CASING
Interval: 0.0'-35'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 35'-45'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 32.0'-45.15
Type: 32.0'-33.0' 30/45 Sand - 33.0'-45.15' #1 Sand

FILTER PACK SEAL
Interval: 27.0'-32.0'
Type: 27.0'-30.0' 3/8" Bentonite Chips - 30.0'-32.0' 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 3'-27'
Type: Portland Cement (Type II)

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

DRILLING METHODS
Soil Drill: 4-inch Sonic
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Trenton Herod

GA INSPECTOR: Jeffrey Ingram
CHECKED BY: Rachel P. Kirkman, P.G.
DATE: 9/15/16

GOLDER

BOREHOLE RECORD PLANT BRANCH LOGS_SURVEY UPDATED.GPJ PIEDMONT.GDT 8/20/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE PZ-32S/BRGWC-32S

SHEET 2 of 2

PROJECT: SCS Plant Branch
PROJECT NUMBER: 166-0939
DRILLED DEPTH: 45.00 ft
LOCATION: Milledgville, GA

DRILL RIG: TS-150 Track Mounted Rig
DATE STARTED: 7/19/16
DATE COMPLETED: 7/20/16

NORTHING: 1,160,677.70
EASTING: 2,558,497.90
GS ELEVATION: 403.6
TOC ELEVATION: 406.39 ft

DEPTH W.L.: 30.05
ELEVATION W.L.: 322.28
DATE W.L.: 7/22/2016
TIME W.L.: 08:00

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		micaceous grains, biotite, quartz, SAPROLITE; non-cohesive, wet, dense							#1 Sand	
		Boring completed at 45.00 ft								
	355									
50										
	350									
55										
	345									
60										
	340									
65										
	335									
70										
	330									
75										
	325									
80										
	320									
85										
	315									
90										

WELL CASING
Interval: 0.0'-35'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 35'-45'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 32.0'-45.15
Type: 32.0'-33.0' 30/45 Sand - 33.0'-45.15' #1 Sand

FILTER PACK SEAL
Interval: 27.0'-32.0'
Type: 27.0'-30.0' 3/8" Bentonite Chips - 30.0'-32.0' 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 3'-27'
Type: Portland Cement (Type II)

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

DRILLING METHODS
Soil Drill: 4-inch Sonic
Rock Drill: N/A

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Trenton Herod

GA INSPECTOR: Jeffrey Ingram
CHECKED BY: Rachel P. Kirkman, P.G.
DATE: 9/15/16

GOLDER

BOREHOLE RECORD PLANT BRANCH LOGS_SURVEY UPDATED.GPJ PIEDMONT.GDT 8/20/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE PZ-47/BRGWC-47

SHEET 1 of 3

PROJECT: Plant Branch
PROJECT NUMBER: 1666254-01
DRILLED DEPTH: 97.00 ft
LOCATION: Between Pond B

DRILL RIG: Pro Sonic 150
DATE STARTED: 1/25/18
DATE COMPLETED: 1/26/18

NORTHING: 1,162,700.70
EASTING: 2,559,456.70
GS ELEVATION: 408.8
TOC ELEVATION: 411.20 ft

DEPTH W.L.: 25.93
ELEVATION W.L.: 382.87
DATE W.L.: 2/14/18
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0	405	0.00 - 0.50 Ash as sand, fine, dark gray, moist, non-cohesive.	SP		408.3 0.50				Grout Mix with stainless steel casing	**WELL CASING** Interval: 0-81.6 Material: Schedule 40 PVC Diameter: 2" Joint Type: Screw **WELL SCREEN** Interval: 81.6-91.6 Material: 0.010" Slotted Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 91.6-92 **FILTER PACK** Interval: 80-93 Type: FilterSil **FILTER PACK SEAL** Interval: 75-80 Type: 3/8" PEL-PLUG Bentonite Pellets **ANNULUS SEAL** Interval: 0-75 Type: Portland Cement/Quikrete grout mix **WELL COMPLETION** Pad: 4'x4' Protective Casing: 4"x4"x5' **DRILLING METHODS** Soil Drill: Rotosonic Rock Drill: Core
5	400	0.50 - 15.00 Residuum, silty Sand, sands f-m, reddish brown, micaceous, moist, non-cohesive.	SM							
10	395									
15	390	15.00 - 75.00 Saprolite, silty Sand, reddish brown to grayish brown with intermediate white mottling, relic structure, micaceous, dry to moist, non			393.8 15.00					
20	385									
25	380		SM							
30	375								Portland Cement/Quikrete grout mix	
35	370									
40										

Log continued on next page

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Cascade
DRILLER: Matt Pope

GA INSPECTOR: David Hannam
CHECKED BY: Rachel P. Kirkman, P.G.
DATE: 5/31/18

GOLDER

BOREHOLE RECORD 1666254-01 (1)_SURVEY UPDATED.GPJ PIEDMONT.GDT 8/21/20

RECORD OF BOREHOLE PZ-47/BRGWC-47

PROJECT: Plant Branch
PROJECT NUMBER: 1666254-01
DRILLED DEPTH: 97.00 ft
LOCATION: Between Pond B

DRILL RIG: Pro Sonic 150
DATE STARTED: 1/25/18
DATE COMPLETED: 1/26/18

NORTHING: 1,162,700.70
EASTING: 2,559,456.70
GS ELEVATION: 408.8
TOC ELEVATION: 411.20 ft

DEPTH W.L.: 25.93
ELEVATION W.L.: 382.87
DATE W.L.: 2/14/18
TIME W.L.:

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	365	15.00 - 75.00 Saprolite, silty Sand, reddish brown to grayish brown with intermediate white mottling, relic structure, micaceous, dry to moist, non *(Continued)*	SM							
50	360									
55	355									
60	350									
65	345									
70	340									
75	335				333.8 / 75.00					
80	330	75.00 - 92.00 Partially Weathered Rock, shows in sample as Sand with trace gravel and silt, grayish brown with white mottling, micaceous, relic foliation where preserved, dry, non-cohesive.	SP						3/8" PEL-PLUG Bentonite Pellets FilterSil	

Log continued on next page

WELL CASING
Interval: 0-81.6
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Screw

WELL SCREEN
Interval: 81.6-91.6
Material: 0.010" Slotted Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: 91.6-92

FILTER PACK
Interval: 80-93
Type: FilterSil

FILTER PACK SEAL
Interval: 75-80
Type: 3/8" PEL-PLUG Bentonite Pellets

ANNULUS SEAL
Interval: 0-75
Type: Portland Cement/Quikrete grout mix

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

DRILLING METHODS
Soil Drill: Rotosonic
Rock Drill: Core

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Cascade
DRILLER: Matt Pope

GA INSPECTOR: David Hannam
CHECKED BY: Rachel P. Kirkman, P.G.
DATE: 5/31/18

GOLDER

Location resurveyed June - July 2020

RECORD OF BOREHOLE PZ-47/BRGWC-47

SHEET 3 of 3

PROJECT: Plant Branch
PROJECT NUMBER: 1666254-01
DRILLED DEPTH: 97.00 ft
LOCATION: Between Pond B

DRILL RIG: Pro Sonic 150
DATE STARTED: 1/25/18
DATE COMPLETED: 1/26/18

NORTHING: 1,162,700.70
EASTING: 2,559,456.70
GS ELEVATION: 408.8
TOC ELEVATION: 411.20 ft

DEPTH W.L.: 25.93
ELEVATION W.L.: 382.87
DATE W.L.: 2/14/18
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
85	325	75.00 - 92.00 Partially Weathered Rock, shows in sample as Sand with trace gravel and silt, grayish brown with white mottling, micaceous, relic foliation where preserved, dry, non-cohesive. *(Continued)*	SP						0.010" Slotted Schedule 40 PVC	**WELL CASING** Interval: 0-81.6 Material: Schedule 40 PVC Diameter: 2" Joint Type: Screw **WELL SCREEN** Interval: 81.6-91.6 Material: 0.010" Slotted Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 91.6-92 **FILTER PACK** Interval: 80-93 Type: FilterSil **FILTER PACK SEAL** Interval: 75-80 Type: 3/8" PEL-PLUG Bentonite Pellets **ANNULUS SEAL** Interval: 0-75 Type: Portland Cement/Quikrete grout mix **WELL COMPLETION** Pad: 4'x4' Protective Casing: 4"x4"x5' **DRILLING METHODS** Soil Drill: Rotosonic Rock Drill: Core
90	320				316.8					
95	315	92.00 - 97.00 BIOTITE GNEISS, sample recovered as rock flour, cobbles, and gravel. Slightly weathered to fresh, white and black, thinly bedded, phaneritic, strong.	GP		92.00				3/8" PEL-PLUG Bentonite Pellets	
100	310	Boring completed at 97.00 ft			311.8					
105	305									
110	300									
115	295									
120	290									

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Cascade
DRILLER: Matt Pope

GA INSPECTOR: David Hannam
CHECKED BY: Rachel P. Kirkman, P.G.
DATE: 5/31/18

GOLDER

BOREHOLE RECORD 1666254-01 (1)_SURVEY UPDATED.GPJ PIEDMONT.GDT 8/21/20

Location resurveyed June - July 2020

BORING PZ-11 S
Page 1 of 1

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Branch Hydrogeologic Study
LOCATION Milledgeville, GA

DATE STARTED 2/20/2014 **COMPLETED** 2/20/2014 **GROUND ELEVATION** 390.9 ft **COORDINATES** N 1162467.3 E 2557002.5

CONTRACTOR SCS Field Services **METHOD** Hollow Stem Auger **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** W. Shaughnessy **CHECKED BY** _____ **BORING DEPTH** 26 ft.

GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** 9.2 ft. after 250 hrs.

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION
		Lean Clay (CL) residuum damp, stiff, silty CLAY, red with dark gray-brown mottles, sand micas	390.9
5		saprolite damp, stiff, clayey SILT, yellow-red with black mottles, sand, micas	386.9
10		saprolite very damp, medium stiff, clayey SILT, yellow-brown with black mottles, sand, micas	
15		saprolite wet, soft, SILT, pale yellow with white mottles, sand, micas	
20		saprolite wet, medium stiff, SILT, pale yellow, light gray-brown, white and black mottles, sand, micas`	
25		saprolite wet, medium stiff, SILT, pale yellow, light gray-brown, white and black mottles, sand, micas	364.9

Bottom of borehole at 26.0 feet.

Natural Gamma
75 150 225

WELL DATA
Top of casing Elev. = 393.99

Annular Seal
Filter Pack
Screen Tip Elevation

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 10/29/20 14:45 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\PLANT BRANCH PIEZOMETERS.GPJ

Location resurveyed June - July 2020

BORING PZ-12 D
Page 1 of 3

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Branch Hydrogeologic Study
LOCATION Milledgeville, GA

DATE STARTED 4/1/2014 **COMPLETED** 4/14/2014 **GROUND ELEVATION** 431.4 ft **COORDINATES** N 1164311.9 E 2557136.4

CONTRACTOR SCS Field Services **METHOD** Hollow Stem Auger; Casing Advance; HQ Coring **EQUIPMENT** CME 550

DRILLED BY T. Milam **LOGGED BY** W. Shaughnessy **CHECKED BY** _____ **BORING DEPTH** 143.2 ft.

GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** 56 ft. after 200 hrs.

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Natural Gamma (75 / 150 / 225)	WELL DATA
		Lean Clay (CL) dry, silty CLAY, red with pale yellow mottles	431.4		Top of casing Elev. = 434.09
5		damp, silty CLAY, red with red-yellow mottles, sand, trace micas			
10		damp, silty CLAY, red with red-yellow mottles, sand, trace micas	419.4		
15		dry, clayey SILT, red-yellow and red with white and pink mottles, some quartz gravel, micas			
		dry, clayey SILT, pale red and red with yellow-red mottles, then gray-brown and olive-yellow with white mottles, occasional quartz sand, micas			
20					
		dry, clayey SILT,yellow-brown and pale red with white and black mottles, white felsic seam with quartz sand 23-24 ft., micas			
25					
		dry, sandy SILT, dry, gray-brown, red and yellow-red with black mottles, micas, white felsic sand seam 28-29 ft.			
30					
		dry, sandy SILT, pale gray-brown with white mottles, yellow-red with black mottles, micas			
35					
		dry, sandy SILT, pale gray-brown with white mottles, yellow-red with black mottles, micas			
40					
		dry, clayey SILT, dry to damp, dark gray to black, red and pale gray-brown with white mottles, sand, micas			
45					

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 10/29/20 14:45 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\PLANT BRANCH PIEZOMETERS.GPJ

(Continued Next Page)

SOUTHERN COMPANY

BORING LOG

BORING PZ-12 D

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Branch Hydrogeologic Study
LOCATION Milledgeville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION
		(Con't)	431.4
		very damp, sandy SILT, gray-brown and gray with white mottles, sand seams, very wet 44-45 ft.	
50			381.4
		Silty Sand (ML) wet, silty SAND, gray-brown with white mottles, mica	
55			376.4
		----sampler refusal----	
60			
			369.5
		fine to medium grain, soft to medium hard, slightly weathered, flow banded, few fractures, gray and white banding, partially weathered	
65		----auger refusal----	
		fine to coarse grain, hard, not weathered, flow banded, few fractures, dark gray and white banding, fresh	
70		medium to coarse grain, hard, flow banded, few fractures, dark gray and white banding, fresh	
75		medium to coarse grain, hard, flow banded, few fractures, dark gray and white banding, fresh	
80		medium to coarse grain, hard, flow banded, few fractures, dark gray to black with white banding, fresh	
85		medium to coarse grain, hard, flow banded, few fractures, dark gray to black with white banding, fresh	
90		medium to coarse grain, hard, flow banded, few fractures, dark gray to black with white banding, fresh	
95		medium to coarse grain, hard, flow banded, few fractures, dark gray to black with white banding, fresh	

Natural Gamma
75 150 225

WELL DATA
Top of casing Elev. = 434.09
(CONTINUED)
Annular Seal
Filter Pack

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 10/29/20 14:45 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\PLANT BRANCH PIEZOMETERS.GPJ

(Continued Next Page)

SOUTHERN COMPANY

BORING LOG

BORING PZ-12 D

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Branch Hydrogeologic Study
LOCATION Milledgeville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Natural Gamma (75 / 150 / 225)	WELL DATA
			431.4		Top of casing Elev. = 434.09
100		*(Con't)*			(CONTINUED)
		medium to coarse grain, hard to medium hard, flow banded, few fractures, dark gray to black with white banding, fresh			
105		medium to coarse grain, hard, flow banded, few fractures, dark gray to black with white banding, fresh			
110		medium to coarse grain, hard, flow banded, few fractures, dark gray to black with white banding, fresh			
115		medium to coarse grain, hard to medium hard, flow banded, few fractures, dark gray to black with white banding, micro-folds, fresh			
120		medium to coarse grain, hard to medium hard, flow banded, few fractures, dark gray to black with white banding, fresh			
125		medium to coarse grain, hard to medium hard, flow banded, few fractures, dark gray to black with white banding, feldspar phenocrysts, fresh			
130		medium to coarse grain, hard to medium hard, flow banded, one fracture, dark gray to black with white banding, fresh			
135		medium to coarse grain, hard to medium hard, flow banded, several fractures, dark gray to black with white banding, fresh			
140		medium to coarse grain, hard to medium hard, flow banded, several fractures, dark gray to black with white banding, fresh	288.2		**Screen Tip Elevation**

Bottom of borehole at 143.2 feet.

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 10/29/20 14:45 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\PLANT BRANCH PIEZOMETERS.GPJ

Location resurveyed June - July 2020

BORING PZ-18 S
Page 1 of 1

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Branch Hydrogeologic Study
LOCATION Milledgeville, GA

DATE STARTED 2/26/2014 **COMPLETED** 2/26/2014 **GROUND ELEVATION** 359.7 ft **COORDINATES** N 1160757.3 E 2557747.4

CONTRACTOR SCS Field Services **METHOD** Hollow Stem Auger **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** W. Shaughnessy **CHECKED BY** _____ **BORING DEPTH** 25.1 ft.

GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** 14.8 ft. after 260 hrs.

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Natural Gamma (75 / 150 / 225)	WELL DATA (Top of casing Elev. = 362.82)
			359.7		
5		See PZ-18 I for material descriptions			
10					Annular Seal
					Filter Pack
15		▽			
20					
25					Screen Tip Elevation

Bottom of borehole at 25.1 feet.

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 10/29/20 14:45 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\PLANT BRANCH PIEZOMETERS.GPJ

Location resurveyed June - July 2020

BORING PZ-18 I
Page 1 of 1

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Branch Hydrogeologic Study
LOCATION Milledgeville, GA

DATE STARTED 2/24/2014 **COMPLETED** 2/26/2014 **GROUND ELEVATION** 359.6 ft **COORDINATES** N 1160766.2 E 2557745.5

CONTRACTOR SCS Field Services **METHOD** Hollow Stem Auger; Casing Advance; HQ Coring **EQUIPMENT** CME 550

DRILLED BY S. Denty **LOGGED BY** W. Shaughnessy **CHECKED BY** _____ **BORING DEPTH** 38.8 ft.

GROUND WATER DEPTH: DURING _____ **COMP.** _____ **DELAYED** 14.7 ft. after 260 hrs.

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Natural Gamma (75 / 150 / 225)	WELL DATA (Top of casing Elev. = 362.55)
		Lean Clay (CL) residuum dry, medium stiff, CLAY, red, micas, silt	359.6		
5		residuum dry, stiff, Clayey SILT, reds, mica	352.6		
10		residuum dry, stiff, Clayey SILT, yellow-red, micas			
15		saprolite very damp, stiff, Clayey SILT, yellow-red, light gray, pale yellow, micas			
20		saprolite wet, stiff, Clayey SILT, brown, white, micas, sand			**Annular Seal**
25		saprolite wet, hard, Clayey SILT, yellow-brown, dark gray, gray, micas, sand	333.5		
		Felsic biotite GNEISS medium to coarse grain, medium hard to hard, moderately to not weathered, flow banded, numerous fractures, dark gray, pale yellow, white banding, feldspar, quartz, biotite, pyrite			**Filter Pack**
30		medium to coarse grain, medium hard to hard, slightly to not weathered, flow banded, few fractures, dark gray, white banding, feldspar, quartz, biotite, pyrite			
35		medium to coarse grain, medium hard to hard, slightly to not weathered, flow banded, few fractures, dark gray, white banding, feldspar, quartz, biotite, pyrite	320.8		**Screen Tip Elevation**

Bottom of borehole at 38.8 feet.

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 10/29/20 14:45 - \\ALTRCFP01\LAPARKER$\DESKTOP\GPC\PLANT BRANCH PIEZOMETERS.GPJ

Location resurveyed June - July 2020

RECORD OF BOREHOLE PZ-23I

SHEET 1 of 2

PROJECT: SCS Plant Branch
PROJECT NUMBER: 166-0939
DRILLED DEPTH: 67.00 ft
LOCATION: Milledgville, GA

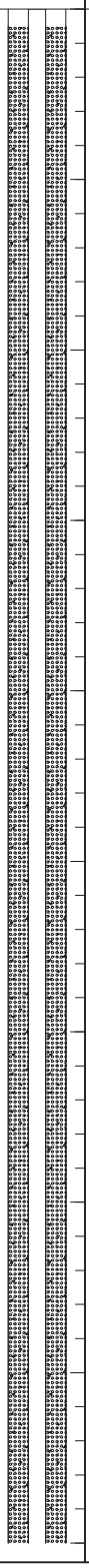
DRILL RIG: Mini-Sonic Track Mounted Rig
DATE STARTED: 7/27/16
DATE COMPLETED: 7/29/16

NORTHING: 1,162,975.40
EASTING: 2,557,877.70
GS ELEVATION: 425.1
TOC ELEVATION: 427.74 ft

DEPTH W.L.: 52.00
ELEVATION W.L.: 375.90
DATE W.L.: 07/29/2016
TIME W.L.: na

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
0	425	0.00 - 6.00 sandy SILT, fine sand, reddish borwn , cohesive, w < PL	ML		419.1	1		6.00 / 6.00
5	420							
		6.00 - 16.00 silty SAND, fine to medium sand, light reddish brown, non-cohesive, moist, micaseous			6.00 409.1	2		8.00 / 10.00
10	415							
15	410							
		16.00 - 24.00 light grayish brown	SM		16.00 401.1	3		5.40 / 10.00
20	405							
		24.00 - 36.00 silty SAND, fine to coarse, trace gravel, light grayish brown, moist, relict rock structure apparent, SAPROLITE			24.00			
25	400							
30	395					4		7.50 / 10.00
35	390				389.1			
		36.00 - 37.00 No Recovery			36.00 388.1	5		0.00 / 1.00
		37.00 - 40.00 Biotite Gneiss, highly competent, litlle weathering	GNEISS		37.00 385.1	6		2.50 / 3.00
40	385	40.00 - 42.00 Difficult drilling			40.00 383.1			
		42.00 - 67.00 Biotite Gneiss			42.00	7		0.00 / 6.00
45		Log continued on next page						

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-56.5'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 56.5'-66.5'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 54.5'-67'
Type: 54.5-55.0 - 30/45 Sand; 55.5-67 - #1 Sand

FILTER PACK SEAL
Interval: 48.5'-54.5'
Type: 52.5'-54.5' - 3/8" Bentonite Pellets, 50.5' -52.5' - 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 48.5'
Type: Portland Cement (Type II)

WELL COMPLETION
Pad: 4'x4'x4"
Protective Casing: Anodized Aluminium

DRILLING METHODS
Soil Drill: 4-inch Sonic
Rock Drill: 4-inch Sonic

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade
DRILLER: John Vasquez

GA INSPECTOR: Randy Pettyjohn
CHECKED BY: Rachel P. Kirkman, P.G.
DATE: 9/15/16

GOLDER

BOREHOLE RECORD PLANT BRANCH LOGS_SURVEY UPDATED.GPJ PIEDMONT.GDT 8/20/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE PZ-23I

SHEET 2 of 2

PROJECT: SCS Plant Branch
PROJECT NUMBER: 166-0939
DRILLED DEPTH: 67.00 ft
LOCATION: Milledgville, GA

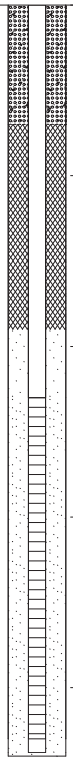
DRILL RIG: Mini-Sonic Track Mounted Rig
DATE STARTED: 7/27/16
DATE COMPLETED: 7/29/16

NORTHING: 1,162,975.40
EASTING: 2,557,877.70
GS ELEVATION: 425.1
TOC ELEVATION: 427.74 ft

DEPTH W.L.: 52.00
ELEVATION W.L.: 375.90
DATE W.L.: 07/29/2016
TIME W.L.: na

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
45	380	42.00 - 67.00 Biotite Gneiss *(Continued)*				7		
50	375					8		6.00/10.00
55	370							
60	365					9		8.60/10.00
65	360				358.1			
		Boring completed at 67.00 ft						
70	355							
75	350							
80	345							
85	340							
90								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-56.5'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 56.5'-66.5'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 54.5'-67'
Type: 54.5-55.0 - 30/45 Sand; 55.5-67 - #1 Sand

FILTER PACK SEAL
Interval: 48.5'-54.5'
Type: 52.5'-54.5' - 3/8" Bentonite Pellets, 50.5' -52.5' - 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 48.5'
Type: Portland Cement (Type II)

WELL COMPLETION
Pad: 4'x4'x4"
Protective Casing: Anodized Aluminium

DRILLING METHODS
Soil Drill: 4-inch Sonic
Rock Drill: 4-inch Sonic

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade
DRILLER: John Vasquez

GA INSPECTOR: Randy Pettyjohn
CHECKED BY: Rachel P. Kirkman, P.G.
DATE: 9/15/16

GOLDER

BOREHOLE RECORD PLANT BRANCH LOGS_SURVEY UPDATED.GPJ PIEDMONT.GDT 8/20/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE PZ-31S

SHEET 1 of 1

PROJECT: SCS Plant Branch
PROJECT NUMBER: 166-0939
DRILLED DEPTH: 39.50 ft
LOCATION: Milledgville, GA

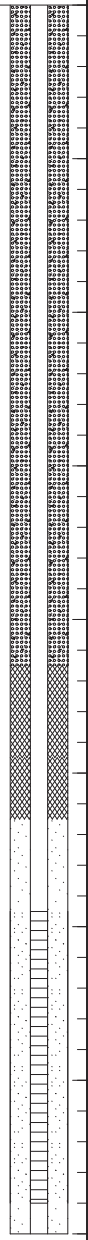
DRILL RIG: Prosonic Truck Mounted Rig
DATE STARTED: 7/15/16
DATE COMPLETED: 7/26/16

NORTHING: 1,160,936.90
EASTING: 2,557,971.80
GS ELEVATION: 374.3
TOC ELEVATION: 376.77 ft

DEPTH W.L.: 19.6
ELEVATION W.L.: 357.34
DATE W.L.: 7/26/16
TIME W.L.: 10:07

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
0		0.00 - 5.50 sandy SILT, NP, medium grain, trace fine gravel; reddish brown, massive, micaceous, SAPROLITE; NC, dry loose	MLS		368.8	1		7.00 / 7.00
5	370	5.50 - 5.80 SAND, poorly graded, fine grain; light yellowish brown; NC, dry, loose	SP MLS		5.80 367.3			
		5.80 - 7.00 sandy SILT, NP, medium grain, trace fine gravel; reddish brown, massive, micaceous, SAPROLITE; NC, dry, loose			7.00 364.8			
10	365	7.00 - 9.50 fine sand, trace coarse subangular sand; brown, homogenous, micaceous, SAPROLITE; NC, dry, compact			9.50			
		9.50 - 17.00 SAND, well graded, medium grain, trace subrounded coarse sand, trace silt; grey brown with white mottle, massive, micaceous, SAPROLITE; NC, dry (moist at 16 ft), compact	SW		357.3	2		10.00 / 10.00
15	360	17.00 - 19.50 clayey SAND, medium grain, poorly graded, highly plastic clay, trace subangular coarse sand; yellowish brown sand, grey clay, moderately weathered, heterogenous, micaceous; NC, moist, slightly loose	SC		17.00 354.8			
		19.50 - 23.00 poorly graded, medium grain sand, low plastic clay; grey with brown mottling, homogenous, micaceous, SAPROLITE; cohesive, wet, firm	SC		19.50 351.3	3		10.00 / 10.00
20	355	23.00 - 25.00 highly plastic clay, trace subangular coarse sand; yellowish brown sand, grey clay, moderately weathered, heterogenous, micaceous, SAPROLITE; NC, moist, slightly loose	SC		23.00 349.3			
25	350	25.00 - 27.00 well graded, medium-coarse grained sand, few clay, trace subangular fine gravel, trace cobbles; dark grey clay, light brown sand with white mottling, heterogenous, micaceous, SAPROLITE; NC, moist, loose	SC		25.00 347.3			
		27.00 - 29.50 CLAYEY SAND, poorly graded, medium grained sand, low plastic clay; grey with brown mottling, homogenous, micaceous, SAPROLITE; cohesive, wet, firm	SC		27.00 344.8			
30	345	29.50 - 31.50 gravelly SAND, medium-coarse sand, well graded, some angular cobbles; grey-white mottling, highly weathered bedrock, micaceous; NC, wet, very loose	SPG TWR		29.50 342.8 31.50 341.3	4		10.00 / 10.00
35	340	31.50 - 33.00 TRANSITIONALLY WEATHERED ROCK, biotite GNEISS, highly weathered, yellow, white brown, medium-coarsely crystalling, soft rock, feldspar, quartz, biotite, pulverized rock, moist, highly fractured			33.00 337.3			
		33.00 - 37.00 No Recovery						
		37.00 - 37.80 sluff in hole			336.5			
		37.80 - 38.00 TRANSITIONALLY WEATHERED ROCK, biotite GNEISS, highly weathered, yellow, white brown, medium-coarsely crystalling, soft rock, feldspar, quartz, biotite, pulverized rock, wet, highly fractured			38.00 334.8	5		1.00 / 2.50
40	335	38.00 - 39.50 No Recovery						
		Boring completed at 39.50 ft						
45	330							
50	325							

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0'-29.5'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 29.5'-39.5'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 26.5'-39.5'
Type: 26.5.'-27.5', 30/45 fine sand; 27.5'-39.5', #1 sand

FILTER PACK SEAL
Interval: 21.5'-26.5'
Type: 21.5'-24.5', 3/8" Bentonite Chips; 24.5'-26.5', Bentonite Pellets

ANNULUS SEAL
Interval: 2.0'-21.5'
Type: Portland Cement (Type I)

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

DRILLING METHODS
Soil Drill: 4-inch Sonic
Rock Drill: 4-inch Sonic

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: John Vasquez

GA INSPECTOR: Will Ethier
CHECKED BY: Rachel P. Kirkman, P.G.
DATE: 9/15/16

GOLDER

BOREHOLE RECORD PLANT BRANCH LOGS2_SURVEY UPDATED.GPJ PIEDMONT.GDT 8/20/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE PZ-39

SHEET 1 of 2

PROJECT: SCS Plant Branch
PROJECT NUMBER: 166-0939
DRILLED DEPTH: 56.50 ft
LOCATION: Milledgville, GA

DRILL RIG: TS-150 Track Mounted Rig
DATE STARTED: 7/30/16
DATE COMPLETED: 7/30/16

NORTHING: 1,163,675.40
EASTING: 2,557,460.50
GS ELEVATION: 432.0
TOC ELEVATION: 434.78 ft

DEPTH W.L.: 46.02
ELEVATION W.L.: 388.68
DATE W.L.: 08/02/2016
TIME W.L.: 14:15

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	430	0.00 - 10.00 SILT, NP; reddish brown, moderately weathered, massive, micaceous, SAPROLITE; cohesive, dry, firm	ML		422	1		10.00 10.00	Portland Type 1 3/8" Bentonite Chips 3/8" Bentonite Pellets #1 30/45 FineSand #1 Coarse Sand 0.010" Screen Slot #1 Sand 3/8" Bentonite Chips	**WELL CASING** Interval: 0'-34.7' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded **WELL SCREEN** Interval: 34.7'-44.7' Material: U-Pack Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC **FILTER PACK** Interval: 31.4'-44.7' Type: 31.4'-32.5', 30/45 fine sand; 32.5'-44.7', #1 sand **FILTER PACK SEAL** Interval: 26.2'-31.4' Type: 26.2'-29.4', 3/8" Bentonite Chips; 29.4'-31.4', Bentonite Pellets **ANNULUS SEAL** Interval: 2'-26.2' Type: Portland Cement (Type I) **WELL COMPLETION** Pad: 4'x4'x4" Protective Casing: Anodized Aluminum **DRILLING METHODS** Soil Drill: 4-inch Sonic Rock Drill: N/A
5	425									
10	420	10.00 - 15.00 No Recovery			10.00 417	2		5.00 10.00		
15	415	15.00 - 19.50 SILT, NP, trace fine sand; reddish brown, moderately weathered, massive, micaceous, SAPROLITE; cohesive, dry, firm	ML		15.00 412.5					
20	410	19.50 - 20.00 trace fine-coarse sand; white mottling, relict rock structure, micaceous, SAPROLITE; cohesive, dry, soft			20.00 410	3		8.00 10.00		
		20.00 - 22.00 No Recovery			22.00					
25	405	22.00 - 30.00 SILT, NP, trace fine-coarse sand; reddish brown with white mottling, moderately weathered, relict rock structure, micaceous, SAPROLITE; cohesive, moist, soft	ML		402					
30	400	30.00 - 33.00 No Recovery			30.00 399	4		7.00 10.00		
35	395	33.00 - 34.00 SILT, NP, trace fine-coarse sand; reddish brown with white mottling, moderately weathered, relict rock structure, micaceous, SAPROLITE; cohesive, moist, soft 34.00 - 40.00 light grey brown	ML		33.00 398 34.00 392					
40	390	40.00 - 45.20 sandy SILT, NP, fine-medium grain sand, trace coarse sand; reddish light grey brown mottled, moderately weathered, relict foliation structure, micaceous, SAPROLITE; cohesive, wet, very soft	MLS		40.00 386.8	5		6.50 6.50		
45	385	45.20 - 46.20 silty SAND, well graded fine-coarse sand, angular, NP, trace subangular cobbles, weathered beadrock, quartz, mica; grey brown, lightly weathered, relict foliation structures, micaceous, SAPROLITE, cohesive, wet, very soft	SM		45.20 385.8					
		46.20 - 56.50 Fresh, foliated, dark grey, white, red, finely-medium crystalline, highly competent rock, biotite GNEISS, little fractured	GNEISS		46.20	6		3.50 3.50		
50		Log continued on next page								

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Trenton Herod

GA INSPECTOR: Will Ethier
CHECKED BY: Rachel P. Kirkman, P.G.
DATE: 5/15/17

GOLDER

BOREHOLE RECORD PLANT BRANCH LOGS2_SURVEY UPDATED.GPJ PIEDMONT.GDT 9/29/20

RECORD OF BOREHOLE PZ-39

SHEET 2 of 2

PROJECT: SCS Plant Branch
PROJECT NUMBER: 166-0939
DRILLED DEPTH: 56.50 ft
LOCATION: Milledgville, GA

DRILL RIG: TS-150 Track Mounted Rig
DATE STARTED: 7/30/16
DATE COMPLETED: 7/30/16

NORTHING: 1,163,675.40
EASTING: 2,557,460.50
GS ELEVATION: 432.0
TOC ELEVATION: 434.78 ft

DEPTH W.L.: 46.02
ELEVATION W.L.: 388.68
DATE W.L.: 08/02/2016
TIME W.L.: 14:15

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
50		46.20 - 56.50 Fresh, foliated, dark grey, white, red, finely-medium crystalline, highly competent rock, biotite GNEISS, little fractured *(Continued)*	GNEISS						3/8" Bentonite – Pellets	**WELL CASING** Interval: 0'-34.7' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded **WELL SCREEN** Interval: 34.7'-44.7' Material: U-Pack Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC **FILTER PACK** Interval: 31.4'-44.7' Type: 31.4'-32.5', 30/45 fine sand; 32.5'-44.7', #1 sand **FILTER PACK SEAL** Interval: 26.2'-31.4' Type: 26.2'-29.4', 3/8" Bentonite Chips; 29.4'-31.4', Bentonite Pellets **ANNULUS SEAL** Interval: 2'-26.2' Type: Portland Cement (Type I) **WELL COMPLETION** Pad: 4'x4'x4" Protective Casing: Anodized Aluminum **DRILLING METHODS** Soil Drill: 4-inch Sonic Rock Drill: N/A
55	380				375.5					
60	375	Boring completed at 56.50 ft								
65	370									
70	365									
75	360									
80	355									
85	350									
90	345									
95	340									
100	335									

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Trenton Herod

GA INSPECTOR: Will Ethier
CHECKED BY: Rachel P. Kirkman, P.G.
DATE: 5/15/17

GOLDER

BOREHOLE RECORD PLANT BRANCH LOGS2_SURVEY UPDATED.GPJ PIEDMONT.GDT 9/29/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE PZ-46

SHEET 1 of 2

PROJECT: Plant Branch
PROJECT NUMBER: 1666254-01
DRILLED DEPTH: 47.00 ft
LOCATION: Former Coal Pile

DRILL RIG: Pro Sonic 150
DATE STARTED: 2/5/18
DATE COMPLETED: 2/5/18

NORTHING: 1,162,756.20
EASTING: 2,560,559.00
GS ELEVATION: 382.1
TOC ELEVATION: 384.64 ft

DEPTH W.L.: 8.85
ELEVATION W.L.: 373.25
DATE W.L.: 2/14/18
TIME W.L.:

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	382	0.00 - 8.00 Soil was removed by Hydrovac from 0-8 ft bgs.							Grout mix and stainless steel casing	
5	380									
10	375				374.1					
15	370	8.00 - 37.00 Residuum, silty Sand, sands f-c, dark brown, micaceous, non-cohesive, moist, loose.	SM		8.00				Portland cement/quikrete grout mix	
20	365									
25	360									
30	355								3/8" PEL-PLUG Bentonite Pellets	
35	350								FilterSil	
40	345				345.1					
		37.00 - 39.00 Saprolite, BIOTITE GNEISS, core presented as rock flour, and gravel/cobbles, black and white with light green coating around rock, highly mafic, thinly laminated, fine grained, soft.	GP-GM		37.00				0.010" Slotted Schedule 40 PVC	
					343.1					
		39.00 - 47.00 BIOTITE GNEISS, slightly weathered to fresh, thickly banded, white and black, phaneritic, very strong.			39.00					

Log continued on next page

WELL CASING
Interval: 0-35.6
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Screw

WELL SCREEN
Interval: 35.6-45.6
Material: 0.010" Slotted Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: 45.6-47

FILTER PACK
Interval: 34-46
Type: FilterSil

FILTER PACK SEAL
Interval: 29-34
Type: 3/8" PEL-PLUG Bentonite Pellets

ANNULUS SEAL
Interval: 0-29
Type: Portland Cement/Quikrete grout mix

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

DRILLING METHODS
Soil Drill: Rotosonic
Rock Drill: Core

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Cascade
DRILLER: Matt Pope

GA INSPECTOR: Ben Hodges
CHECKED BY: Rachel P. Kirkman, P.G.
DATE: 5/31/18

GOLDER

BOREHOLE RECORD 1666254-01 (1)_SURVEY UPDATED.GPJ PIEDMONT.GDT 8/21/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE PZ-46

PROJECT: Plant Branch
PROJECT NUMBER: 1666254-01
DRILLED DEPTH: 47.00 ft
LOCATION: Former Coal Pile

DRILL RIG: Pro Sonic 150
DATE STARTED: 2/5/18
DATE COMPLETED: 2/5/18

NORTHING: 1,162,756.20
EASTING: 2,560,559.00
GS ELEVATION: 382.1
TOC ELEVATION: 384.64 ft

DEPTH W.L.: 8.85
ELEVATION W.L.: 373.25
DATE W.L.: 2/14/18
TIME W.L.:

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	340	39.00 - 47.00 BIOTITE GNEISS, slightly weathered to fresh, thickly banded, white and black, phaneritic, very strong. *(Continued)*								
					335.1					
50	335	Boring completed at 47.00 ft								
55	330									
60	325									
65	320									
70	315									
75	310									
80	305									

WELL CASING
Interval: 0-35.6
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Screw

WELL SCREEN
Interval: 35.6-45.6
Material: 0.010" Slotted Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: 45.6-47

FILTER PACK
Interval: 34-46
Type: FilterSil

FILTER PACK SEAL
Interval: 29-34
Type: 3/8" PEL-PLUG Bentonite Pellets

ANNULUS SEAL
Interval: 0-29
Type: Portland Cement/Quikrete grout mix

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

DRILLING METHODS
Soil Drill: Rotosonic
Rock Drill: Core

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Cascade
DRILLER: Matt Pope

GA INSPECTOR: Ben Hodges
CHECKED BY: Rachel P. Kirkman, P.G.
DATE: 5/31/18

GOLDER

Location resurveyed June - July 2020

RECORD OF BOREHOLE PZ-48

SHEET 1 of 2

PROJECT: Plant Branch
PROJECT NUMBER: 1666254-01
DRILLED DEPTH: 67.00 ft
LOCATION: South of Skills Center

DRILL RIG: Pro Sonic 150
DATE STARTED: 1/24/18
DATE COMPLETED: 1/25/18

NORTHING: 1,163,046.70
EASTING: 2,558,444.60
GS ELEVATION: 418.3
TOC ELEVATION: 420.90 ft

DEPTH W.L.: 30.55
ELEVATION W.L.: 387.75
DATE W.L.: 2/14/18
TIME W.L.:

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	418	0.00 - 8.00 Soil removed by Hydrovac from 0-8 ft bgs.							Grout mix with stainless steel casing	**WELL CASING** Interval: 0-56.6 Material: Schedule 40 PVC Diameter: 2" Joint Type: Screw **WELL SCREEN** Interval: 56.6-66.6 Material: 0.010" Slotted Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 66.6-67 **FILTER PACK** Interval: 55-67 Type: FilterSil **FILTER PACK SEAL** Interval: 50-55 Type: 3/8" PEL-PLUG Bentonite Pellets **ANNULUS SEAL** Interval: 0-50 Type: Portland Cement/Quikrete grout mix **WELL COMPLETION** Pad: 4'x4' Protective Casing: 4"x4"x5' **DRILLING METHODS** Soil Drill: Rotosonic Rock Drill: Core
5	415									
10	410	8.00 - 17.00 Fill, silty Sand, reddish brown, micaceous, moist, non-cohesive.	SM		410.3 8.00					
15	405									
20	400	17.00 - 64.50 Residuum, Sand with some silt, grayish brown with white mottling, occasional relic structure, micaceous, dry, non-cohesive.	SM		401.3 17.00					
25	395								Portland Cement/Quikrete grout mix	
30	390									
35	385									
40	380									

Log continued on next page

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Cascade
DRILLER: Matt Pope

GA INSPECTOR: David Hannam
CHECKED BY: Rachel P. Kirkman, P.G.
DATE: 5/31/18

GOLDER

BOREHOLE RECORD 1666254-01 (1)_SURVEY UPDATED.GPJ PIEDMONT.GDT 8/21/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE PZ-48

SHEET 2 of 2

PROJECT: Plant Branch
PROJECT NUMBER: 1666254-01
DRILLED DEPTH: 67.00 ft
LOCATION: South of Skills Center

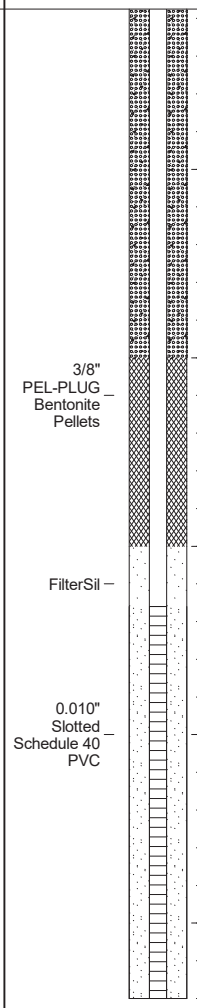
DRILL RIG: Pro Sonic 150
DATE STARTED: 1/24/18
DATE COMPLETED: 1/25/18

NORTHING: 1,163,046.70
EASTING: 2,558,444.60
GS ELEVATION: 418.3
TOC ELEVATION: 420.90 ft

DEPTH W.L.: 30.55
ELEVATION W.L.: 387.75
DATE W.L.: 2/14/18
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
		17.00 - 64.50 Residuum, Sand with some silt, grayish brown with white mottling, occasional relic structure, micaceous, dry, non-cohesive. *(Continued)*						
45	375							
50	370							
	365		SM					
55								
60	360							
	355				353.8			
65		64.50 - 65.50 Partially weathered rock, sampled as sand and gravel with trace silt, grayish brown, subangular, non-cohesive.	GP-GM		64.50 352.8			
		65.50 - 67.00 GRANITIC BUTTON SCHIST, fresh, with biotite/muscovite/feldspar/quartz, weak foliation near horizontal, strong.			65.50 351.3			
	350	Boring completed at 67.00 ft						
70								
	345							
75								
	340							
80								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0-56.6
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Screw

WELL SCREEN
Interval: 56.6-66.6
Material: 0.010" Slotted Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: 66.6-67

FILTER PACK
Interval: 55-67
Type: FilterSil

FILTER PACK SEAL
Interval: 50-55
Type: 3/8" PEL-PLUG Bentonite Pellets

ANNULUS SEAL
Interval: 0-50
Type: Portland Cement/Quikrete grout mix

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

DRILLING METHODS
Soil Drill: Rotosonic
Rock Drill: Core

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Cascade
DRILLER: Matt Pope

GA INSPECTOR: David Hannam
CHECKED BY: Rachel P. Kirkman, P.G.
DATE: 5/31/18

GOLDER

BOREHOLE RECORD 1666254-01 (1)_SURVEY UPDATED.GPJ PIEDMONT.GDT 8/21/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE PZ-54

SHEET 1 of 2

PROJECT: Plant Branch
PROJECT NUMBER: 1666254-01
DRILLED DEPTH: 52.00 ft
LOCATION: SE of Pond E

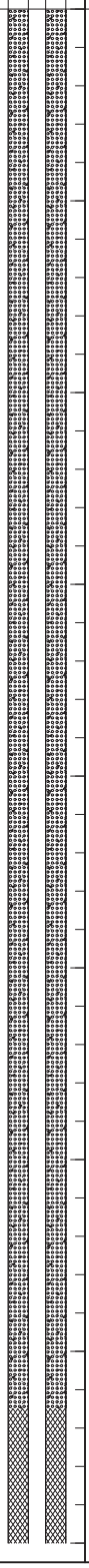
DRILL RIG: C 600 Track Mounted
DATE STARTED: 5/15/20
DATE COMPLETED: 5/15/20

NORTHING: 1,164,828.70
EASTING: 2,555,458.30
GS ELEVATION: 440.8
TOC ELEVATION: 443.86 ft

DEPTH W.L.: 41.4'
ELEVATION W.L.: 399.4
DATE W.L.: 5/16/2020
TIME W.L.: 735

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
0	440	0.00 - 7.00 CL, silty sandy CLAY, medium to coarse sand, angular quartz, red, mottled texture, trace fine gravel, subrounded to subangular, deeply weathered, plagioclase, firm to stiff, dry to moist, RESIDUUM	CL		433.8	1	ROTO SONIC	3.00 / 7.00
5	435	7.00 - 13.00 CL, silty CLAY some sand, fine to medium sand, angular to subangular, yellowish red, no structure, quartz and plagioclase, RESIDUUM	CL		7.00 427.8	2	ROTO SONIC	10.00 / 10.00
10	430	13.00 - 17.00 SM, silty SAND, fine to medium sand, anugular to subangular, light red to red, weak foliation, weathered to very weathered feldspathic biotite gneiss with sodium-plagioclase to potassium feldspar, quartz, little to trace mica, cohesive, non-plastic, firm to moist, dry, RESIDUUM	SM		13.00 423.8			
15	425	17.00 - 19.00 ML, clayey sandy SILT, red, mica rich, deeply weathered, feldspathic biotite gneiss, cohesive, slightly plastic, moist, RESIDUUM	ML		17.00 421.8	3	ROTO SONIC	10.00 / 10.00
20	420	19.00 - 28.00 SM, silty SAND, fine to medium sand, light red to red, weak foliation, weathered to very weathered feldspathic biotite gneiss, moist, cohesive, non-plastic to slightly plastic, firm, SAPROLITE	SM		19.00 412.8			
25	415	28.00 - 37.00 SM, silty SAND, fine to medium sand, light brown to ligh reddish brown, weathered to very weathered, feldspathic biotite gneiss, foliated to weakly foliated, non plastic, firm, oxidation at 28', SAPROLITE	SM		28.00 403.8	4	ROTO SONIC	9.50 / 10.00
30	410							
35	405	37.00 - 48.00 SM, clayey silty SAND, fine sand, pale brown, weathered feldspathic biotite gneiss, quartz-biotite-plagioclase, trace to little oxidation/mottling throughout, foliated to weakly foliated, moist, cohesive, non-plastic, stiff, SAPROLITE	SM		37.00	5	ROTO SONIC	10.00 / 10.00
40		Log continued on next page						

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 42'
Material: Sch 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 42' - 52'
Material: 0.010" Slotted Schedule 40 PVC Pre-Pack Screen
Diameter: 2"
Slot Size: 0.010"
End Cap: 3"

FILTER PACK
Interval: 40' - 52'
Type: #1 Sand

FILTER PACK SEAL
Interval: 36.5' - 40'
Type: Pel-Plug 3/8"

ANNULUS SEAL
Interval: 0' - 36.5'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 4' x 4' x 2"
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: N/A

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Fred Kraus

GA INSPECTOR: Shannon George
CHECKED BY: Brian Steele, PG
DATE: 6/23/20

GOLDER

BOREHOLE RECORD PLANT_BRANCH_20200603_SURVEY UPDATED-ATL1-L-BSTEELE.GPJ PIEDMONT.GDT 8/21/20

RECORD OF BOREHOLE PZ-54

SHEET 2 of 2

PROJECT: Plant Branch
PROJECT NUMBER: 1666254-01
DRILLED DEPTH: 52.00 ft
LOCATION: SE of Pond E

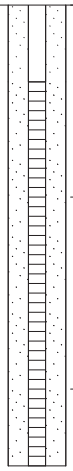
DRILL RIG: C 600 Track Mounted
DATE STARTED: 5/15/20
DATE COMPLETED: 5/15/20

NORTHING: 1,164,828.70
EASTING: 2,555,458.30
GS ELEVATION: 440.8
TOC ELEVATION: 443.86 ft

DEPTH W.L.: 41.4'
ELEVATION W.L.: 399.4
DATE W.L.: 5/16/2020
TIME W.L.: 735

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
40	400	37.00 - 48.00 SM, clayey silty SAND, fine sand, pale brown, weathered feldspathic biotite gneiss, quartz-biotite-plagioclase, trace to little oxidation/mottling throughout, foliated to weakly foliated, moist, cohesive, non-plastic, stiff, SAPROLITE *(Continued)*	SM		392.8	5	ROTO SONIC	10.00 / 10.00
45	395							
50	390	48.00 - 52.00 TWR, weathered feldspathic biotite gneiss interlayered with unweathered feldspathic biotite gneiss, coarse grained, foliated to weakly foliated, some oxidation staining	TWR		48.00 388.8	6	ROTO SONIC	5.00 / 5.00
		Boring completed at 52.00 ft						
55	385							
60	380							
65	375							
70	370							
75	365							
80								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 42'
Material: Sch 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 42' - 52'
Material: 0.010" Slotted Schedule 40 PVC Pre-Pack Screen
Diameter: 2"
Slot Size: 0.010"
End Cap: 3"

FILTER PACK
Interval: 40' - 52'
Type: #1 Sand

FILTER PACK SEAL
Interval: 36.5' - 40'
Type: Pel-Plug 3/8"

ANNULUS SEAL
Interval: 0' - 36.5'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 4' x 4' x 2"
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: N/A

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Fred Kraus

GA INSPECTOR: Shannon George
CHECKED BY: Brian Steele, PG
DATE: 6/23/20

GOLDER

BOREHOLE RECORD PLANT_BRANCH_20200603_SURVEY UPDATED-ATL1-L-BSTEELE.GPJ PIEDMONT.GDT 8/21/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE PZ-55

SHEET 1 of 2

PROJECT: Plant Branch
PROJECT NUMBER: 1666254-01
DRILLED DEPTH: 49.30 ft
LOCATION: SE of Pond E

DRILL RIG: TSI Compact Crawler
DATE STARTED: 5/19/20
DATE COMPLETED: 5/19/20

NORTHING: 1,163,208.00
EASTING: 2,554,783.60
GS ELEVATION: 450.2
TOC ELEVATION: 453.07 ft

DEPTH W.L.: 45.3'
ELEVATION W.L.: 404.9
DATE W.L.: 5/20/2020
TIME W.L.: 740

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
0	450	0.00 - 8.00 CL, silty CLAY, some sand, fine to medium sand, quartz angular, dark red, cohesive, slightly plastic to plastic, dry to moist, w<PL, firm to stiff, RESIDUUM	CL	442.2	1	ROTO SONIC	9.00 9.00
		8.00 - 9.50 ML, sandy SILT, very fine to fine sand, red to dark red, weathered gneiss, foliated, quartz-weathered plagioclase/feldspar and biotite, medium grained gneiss, moist, non-plastic, cohesive, firm, SAPROLITE	ML	8.00 440.7			
10	440	9.50 - 12.00 SM, silty SAND, fine to coarse sand, quartz angular, red, loose, non-plastic, moist to wet, SAPROLITE	SM	9.50 438.2	2	ROTO SONIC	8.00 10.00
		12.00 - 39.50 SM, silty SAND, fine to medium sand, weathered feldspathic biotite gneiss, weakly foliated, subhorizontal, non-cohesive, non-plastic, loose to compact, SAPROLITE		12.00			
15	435						
20	430	oxidation/mottling at 28.5' to 31'			3	ROTO SONIC	7.00 10.00
25	425		SM				
30	420				4	ROTO SONIC	10.00 10.00
35	415						
				410.7	5		10.30 10.30
40		Log continued on next page	SP-SM	39.50			

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES: AquaGuard Bentonite Grout; Riser; Bentonite

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 39.3'
Material: Sch 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 39.3' - 49.3'
Material: 0.010" Slotted Schedule 40 PVC Pre-Pack Screen
Diameter: 2"
Slot Size: 0.010"
End Cap: 3"

FILTER PACK
Interval: 36.4' - 49.3'
Type: #1 Sand

FILTER PACK SEAL
Interval: 34' - 36.4'
Type: Pel-Plug 3/8"

ANNULUS SEAL
Interval: 0' - 34'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 4' x 4' x 2"
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Fred Kraus

GA INSPECTOR: Shannon George
CHECKED BY: Brian Steele, PG
DATE: 6/24/20

GOLDER

BOREHOLE RECORD PLANT_BRANCH_20200603_SURVEY UPDATED-ATL1-L-BSTEELE.GPJ PIEDMONT.GDT 8/21/20

Location resurveyed June - July 2020

RECORD OF BOREHOLE PZ-55

SHEET 2 of 2

PROJECT: Plant Branch
PROJECT NUMBER: 1666254-01
DRILLED DEPTH: 49.30 ft
LOCATION: SE of Pond E

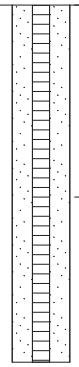
DRILL RIG: TSI Compact Crawler
DATE STARTED: 5/19/20
DATE COMPLETED: 5/19/20

NORTHING: 1,163,208.00
EASTING: 2,554,783.60
GS ELEVATION: 450.2
TOC ELEVATION: 453.07 ft

DEPTH W.L.: 45.3'
ELEVATION W.L.: 404.9
DATE W.L.: 5/20/2020
TIME W.L.: 740

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
40	410	39.50 - 41.00 SP-SM, poorly graded Sand with Silt, very fine to fine sand, little fine gravel, moist to wet, grayish brown, loose to compact, non-plastic *(Continued)*	SP-SM		409.2			
			ML		41.00 408.2			
		41.00 - 42.00 ML, sandy SILT, very fne to fine sand, pale brown, moist, firm, non-plastic, moderate fliation, SAPROLITE			42.00			
45	405	42.00 - 46.00 SP, SAND, fine sand, brown, poorly graded, moist to wet, loose to compact, non-plastic, SAPROLITE	SP		404.2	5	ROTO SONIC	10.30 10.30
		46.00 - 48.50 ML, sandy SILT, fine sand, weathered gneiss, feldspathic biotite gneiss, moderate foliation, cohesive, firm to stiff, non-plastic, moist to wet, SAPROLITE	ML		46.00 401.7			
50	400	48.50 - 49.00 TWR, transtionally weathered rock, weathered biotite gneiss, medium grained	TWR BR		401.2			
		49.00 - 49.30 BR, Biotite Gneiss, medium grained, moderate foliation, hornblende-quartz-biotite-plagioclase						
		Boring completed at 49.30 ft						
55	395							
60	390							
65	385							
70	380							
75	375							
80								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 39.3'
Material: Sch 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 39.3' - 49.3'
Material: 0.010" Slotted Schedule 40 PVC Pre-Pack Screen
Diameter: 2"
Slot Size: 0.010"
End Cap: 3"

FILTER PACK
Interval: 36.4' - 49.3'
Type: #1 Sand

FILTER PACK SEAL
Interval: 34' - 36.4'
Type: Pel-Plug 3/8"

ANNULUS SEAL
Interval: 0' - 34'
Type: AquaGuard Bentonite Grout

WELL COMPLETION
Pad: 4' x 4' x 2"
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: Sonic
Rock Drill: Sonic

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Fred Kraus

GA INSPECTOR: Shannon George
CHECKED BY: Brian Steele, PG
DATE: 6/24/20

GOLDER

BOREHOLE RECORD PLANT_BRANCH_20200603_SURVEY UPDATED-ATL1-L-BSTEELE.GPJ PIEDMONT.GDT 8/21/20

Boring log revised with new survey data dated 7/23/2020.

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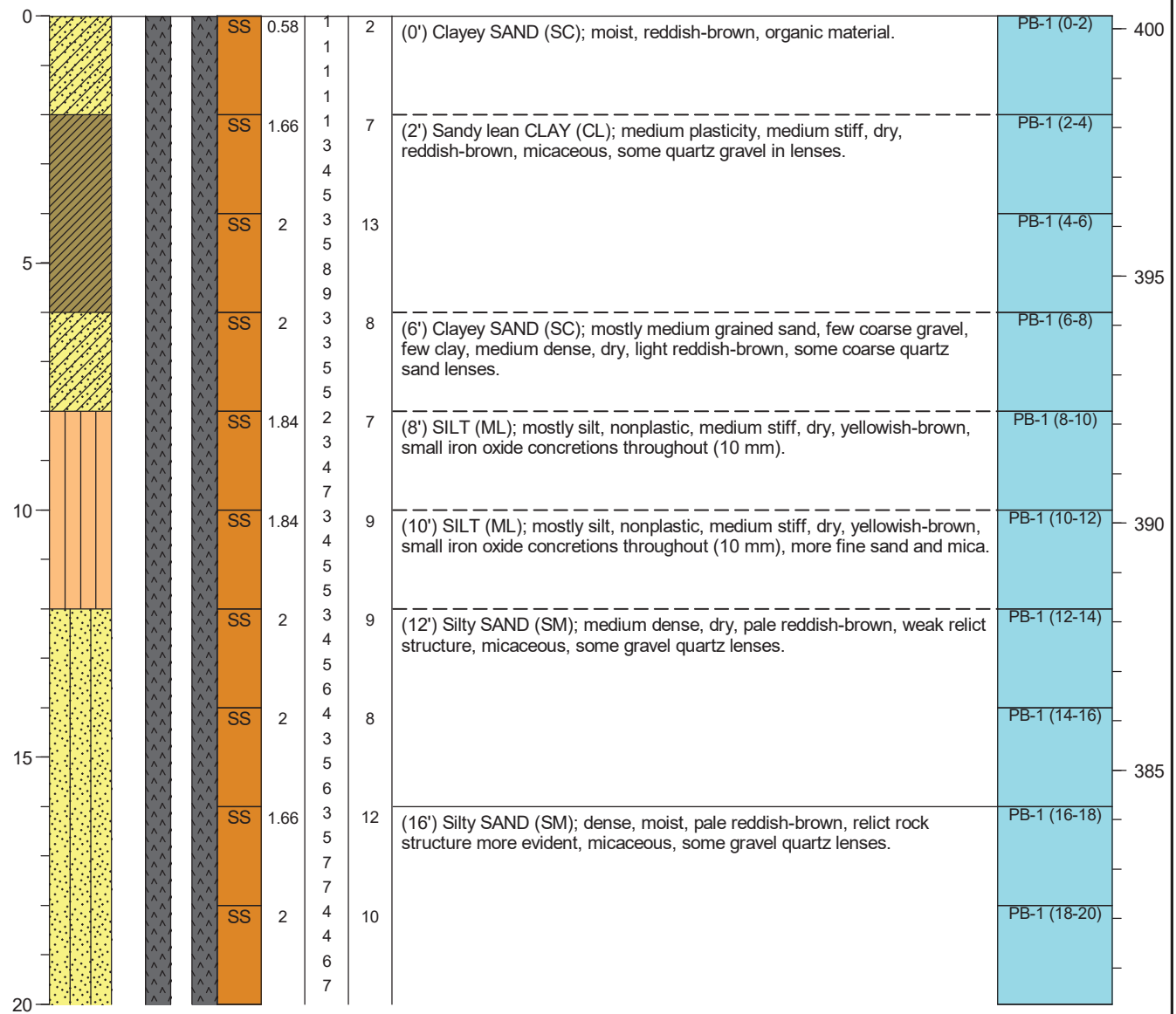
Client: Georgia Power Company
Project: Plant Branch CCR Landfill Site Investigation
Address: 1100 Milledgeville Rd, Milledgeville

WELL LOG
Well No. PB-1S/PB-1
Page: 1 of 5

Drilling Start Date:	01/18/2019	Boring Depth (ft):	96	Well Depth (ft):	38/NA
Drilling End Date:	01/22/2019	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	24.54/NA	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	24.4/NA	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	CME-550	Top of Casing Elev. (ft)	403.16/NA	Sanitary Seal:	Bentonite Chips/Pellets
Driller:	Stan White	Ground Elev. (ft):	400.4/NA	Filter Pack:	Sand
Logged By:	Joseph Ivanowski	Location (X,Y):	1164910.5, 2556355.9	Sampling Method(s):	SS/SH/CO



NOTES: PB-1S is a stickup well located ~10ft away from PB-1 borehole.
NA = Not Applicable

Boring log revised with new survey data dated 7/23/2020.

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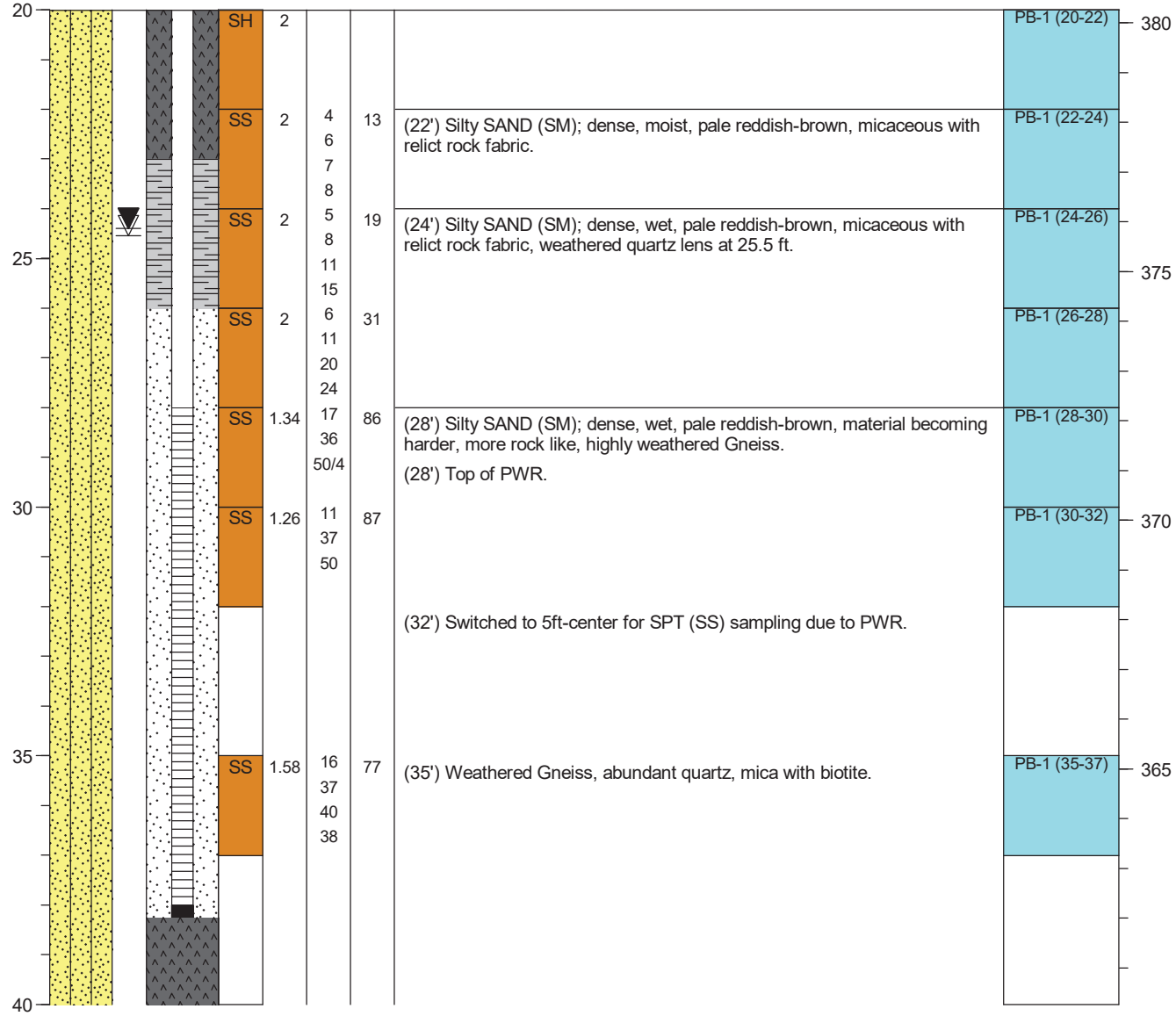
Client: Georgia Power Company
Project: Plant Branch CCR Landfill Site Investigation
Address: 1100 Milledgeville Rd, Milledgeville

WELL LOG
Well No. PB-1S/PB-1
Page: 2 of 5

Drilling Start Date:	01/18/2019	Boring Depth (ft):	96	Well Depth (ft):	38/NA
Drilling End Date:	01/22/2019	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	24.54/NA	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	24.4/NA	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	CME-550	Top of Casing Elev. (ft)	403.16/NA	Sanitary Seal:	Bentonite Chips/Pellets
Driller:	Stan White	Ground Elev. (ft):	400.4/NA	Filter Pack:	Sand
Logged By:	Joseph Ivanowski	Location (X,Y):	1164910.5, 2556355.9	Sampling Method(s):	SS/SH/CO



NOTES: PB-1S is a stickup well located ~10ft away from PB-1 borehole.
NA = Not Applicable

Boring log revised with new survey data dated 7/23/2020.

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Client: Georgia Power Company
Project: Plant Branch CCR Landfill Site Investigation
Address: 1100 Milledgeville Rd, Milledgeville

WELL LOG
Well No. PB-1S/PB-1
Page: 3 of 5

Drilling Start Date:	**01/18/2019**	Boring Depth (ft):	**96**	Well Depth (ft):	**38/NA**
Drilling End Date:	**01/22/2019**	Boring Diameter (in):	**6.50**	Well Diam. (in)/Screen Slot (in):	**2.0/0.010**
Drilling Company:	**Thompson Engineering**	Static Water Level (ft):	**24.54/NA**	Riser Material:	**Sch 40 PVC**
Drilling Method:	**Hollow Stem Auger**	DTW After Drilling (ft):	**24.4/NA**	Screen Material:	**Sch 40 PVC Slotted**
Drilling Equipment:	**CME-550**	Top of Casing Elev. (ft)	**403.16/NA**	Sanitary Seal:	**Bentonite Chips/Pellets**
Driller:	**Stan White**	Ground Elev. (ft):	**400.4/NA**	Filter Pack:	**Sand**
Logged By:	**Joseph Ivanowski**	Location (X,Y):	**1164910.5, 2556355.9**	Sampling Method(s):	**SS/SH/CO**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT: Sample Type	COLLECT: Recovery (ft)	COLLECT: Blow Counts	COLLECT: N Value RQD (%)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: Lab Sample	ELEV. (ft msl)
40				SS	0	19 39 50/5	89		PB-1 (40-42)	360
45				SS	0.92	15 45 50/4	95	(45') Silty SAND (SM); very dense, wet, mottled, weathered Gneiss with quartz, biotite, and feldspar.	PB-1 (45-47)	355
50				SS	0.34	31 50/5	50		PB-1 (50-52)	350
55				SS	0.5	50/5		(55') No bag sample collected.		345
60										

NOTES: PB-1S is a stickup well located ~10ft away from PB-1 borehole.
NA = Not Applicable

Boring log revised with new survey data dated 7/23/2020.

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Client: Georgia Power Company
Project: Plant Branch CCR Landfill Site Investigation
Address: 1100 Milledgeville Rd, Milledgeville

WELL LOG
Well No. PB-1S/PB-1
Page: 4 of 5

Drilling Start Date:	**01/18/2019**	Boring Depth (ft):	**96**	Well Depth (ft):	**38/NA**
Drilling End Date:	**01/22/2019**	Boring Diameter (in):	**6.50**	Well Diam. (in)/Screen Slot (in):	**2.0/0.010**
Drilling Company:	**Thompson Engineering**	Static Water Level (ft):	**24.54/NA**	Riser Material:	**Sch 40 PVC**
Drilling Method:	**Hollow Stem Auger**	DTW After Drilling (ft):	**24.4/NA**	Screen Material:	**Sch 40 PVC Slotted**
Drilling Equipment:	**CME-550**	Top of Casing Elev. (ft)	**403.16/NA**	Sanitary Seal:	**Bentonite Chips/Pellets**
Driller:	**Stan White**	Ground Elev. (ft):	**400.4/NA**	Filter Pack:	**Sand**
Logged By:	**Joseph Ivanowski**	Location (X,Y):	**1164910.5, 2556355.9**	Sampling Method(s):	**SS/SH/CO**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT: Sample Type	COLLECT: Recovery (ft)	COLLECT: Blow Counts	COLLECT: N Value RQD (%)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: Lab Sample	ELEV. (ft msl)
60				SS	0.16	44 50/4	50	(60') No bag sample collected.		340
65				SS	5.5	50/2		(65') Silty SAND (SM); very dense, wet, some coarse quartz sand, weathered Gneiss with relict banding, quartz, feldspar, and biotite. PWR becomes more competent. Very slow drilling, effective auger refusal at 67ft. (67') Began mud rotary drilling.		335
70								(72') No bag sample collected.		330
75										325
80								(79') Very hard drilling.		

NOTES: PB-1S is a stickup well located ~10ft away from PB-1 borehole.
NA = Not Applicable

Boring log revised with new survey data dated 7/23/2020.

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Client: Georgia Power Company
Project: Plant Branch CCR Landfill Site Investigation
Address: 1100 Milledgeville Rd, Milledgeville

WELL LOG
Well No. PB-1S/PB-1
Page: 5 of 5

Drilling Start Date:	**01/18/2019**	Boring Depth (ft):	**96**	Well Depth (ft):	**38/NA**
Drilling End Date:	**01/22/2019**	Boring Diameter (in):	**6.50**	Well Diam. (in)/Screen Slot (in):	**2.0/0.010**
Drilling Company:	**Thompson Engineering**	Static Water Level (ft):	**24.54/NA**	Riser Material:	**Sch 40 PVC**
Drilling Method:	**Hollow Stem Auger**	DTW After Drilling (ft):	**24.4/NA**	Screen Material:	**Sch 40 PVC Slotted**
Drilling Equipment:	**CME-550**	Top of Casing Elev. (ft)	**403.16/NA**	Sanitary Seal:	**Bentonite Chips/Pellets**
Driller:	**Stan White**	Ground Elev. (ft):	**400.4/NA**	Filter Pack:	**Sand**
Logged By:	**Joseph Ivanowski**	Location (X,Y):	**1164910.5, 2556355.9**	Sampling Method(s):	**SS/SH/CO**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT: Sample Type	COLLECT: Recovery (ft)	COLLECT: Blow Counts	COLLECT: N Value RQD (%)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: Lab Sample	ELEV. (ft msl)
80										320
								Top of competent rock at 81.5		
				CO	4.5		100	(81.5') MET ROCK (GNEISS); coarse grained, moderately bedded, fresh, hard, slightly fractured, dark gray to white, poorly jointed, few low angle fractures, abundant qzt, feldspar phenocrysts or augen, biotite, pyroxene, little evidence of water flow in fractures at 82.3, 82.7, 84.5, and 87 ft. Cable tool (rock coring) started at 81.5 ft below ground surface.		
85								Fractures at 82.3 and 82.7		315
								Fracture at 84.5		
				CO	4.5		100	Fracture at 87		
90										310
				CO	1.3		100			
95										305
								(96') Boring terminated. Well installed on 01/24/2019		
100										

NOTES: PB-1S is a stickup well located ~10ft away from PB-1 borehole.
NA = Not Applicable

Easting and Northing in NAD 83.
Elevation in NAVD 88.

Boring log revised with new survey data dated 7/23/2020.

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Client: Georgia Power Company
Project: Plant Branch CCR Landfill Site Investigation
Address: 1100 Milledgeville Rd, Milledgeville

WELL LOG
Well No. PB-2D
Page: 1 of 4

Drilling Start Date:	11/29/2018	Boring Depth (ft):	61	Well Depth (ft):	57
Drilling End Date:	12/04/2018	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	39.50	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	12.40	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	D-50	Top of Casing Elev. (ft):	416.71	Sanitary Seal:	Bentonite Pellets
Driller:	Phil Pitts	Ground Elev. (ft):	414.9	Filter Pack:	Sand
Logged By:	Nardos Tilahun	Location (X,Y):	1164853.6, 2556914.2	Sampling Method(s):	SS/SH/CO

DEPTH (ft)	Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)	SOIL/ROCK VISUAL DESCRIPTION	Lab Sample	ELEV. (ft msl)
0	SS	2	3 3 4 3	7	(0') Elastic SILT (MH); few medium sand, mostly silt, low plasticity, soft, moist, reddish, abundant mica.		
	SS	2	1 1 1 1	2	(2') Elastic SILT (MH); few medium sand, mostly silt, low plasticity, soft, moist, reddish, abundant mica.	PB-2 (2-4)	
5	SH	1					410
	SS	2	2 3 5 9	8	(6') Elastic SILT (MH); few medium sand, mostly silt, low plasticity, soft, moist, reddish, abundant mica.		
	SS	2	2 4 6 8	10		PB-2 (8-10)	
10	SS	2	3 3 5 4	8	(10') Lean CLAY with sand (CL); few fine sand, some silt, mostly clay, medium plasticity, soft, moist, yellowish-brown to red.		405
	SS	2	3 3 2 5	5	(12') Elastic SILT with sand (MH); trace fine sand, mostly silt, few clay, soft, moist, yellow brown to red.	PB-2 (12-14)	
	SS	2	4 4 7 10	11			
15	SS	2	6 6 5 5	11	(15') Silty SAND (SM); mostly fine-coarse grained sand, some silt, trace clay, medium dense, dry, brownish-white, weathered rock fragments, black mottles.	PB-2 (15-16)	400
	SS	2	5 6 5 8	11			
20							395

NOTES: PB-2D is a stickup well.
NA = Not Applicable

Boring log revised with new survey data dated 7/23/2020.

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Client: Georgia Power Company
Project: Plant Branch CCR Landfill Site Investigation
Address: 1100 Milledgeville Rd, Milledgeville

WELL LOG
Well No. PB-2D
Page: 2 of 4

Drilling Start Date:	11/29/2018	Boring Depth (ft):	61	Well Depth (ft):	57
Drilling End Date:	12/04/2018	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	39.50	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	12.40	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	D-50	Top of Casing Elev. (ft):	416.71	Sanitary Seal:	Bentonite Pellets
Driller:	Phil Pitts	Ground Elev. (ft):	414.9	Filter Pack:	Sand
Logged By:	Nardos Tilahun	Location (X,Y):	1164853.6, 2556914.2	Sampling Method(s):	SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT: Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: Lab Sample	ELEV. (ft msl)
20				SS	2	7 5	8			
				SS	2	3 5	11	(21.5') SILT (ML); trace fine sand, mostly silt, few clay, nonplastic, soft, dry, reddish-brown, abundant mica.		
				SS	2	5 5	13	(22') SILT with sand (ML); few fine-coarse sand, mostly silt, trace clay, nonplastic, stiff, dry, brownish-white, black mottles, abundant mica.		
25				SS	2	6 9	10	(24') SILT with sand (ML); few fine-coarse sand, mostly silt, trace clay, nonplastic, stiff, dry, brownish-white to light gray, abundant mica.	PB-2 (24-26)	390
				SS	2	5 5	16	(26') SILT with sand (ML); few fine-coarse sand, mostly silt, trace clay, nonplastic, soft, dry, white to yellow brown.		
				SS	1.5	8 9	21	(28') SILT with sand (ML); few fine-coarse sand, mostly silt, trace clay, nonplastic, stiff, dry, brownish-white.		
30				SS	1.5	5 4	47	(30') SILT (ML); few fine-coarse sand, mostly silt, trace clay, nonplastic, stiff, moist, yellow brown to brownish-white, black mottles, abundant laminated mica.	PB-2 (30-32)	385
				SS	2	6 9	28	(32') SILT (ML); few fine-coarse sand, mostly silt, trace clay, nonplastic, hard, moist, brown to yellow brown to white, black mottles, mica, laminated, weathered white quartz rock fragments.		
				SS	2	6 7	38	(34') SILT (ML); few fine-coarse sand, mostly silt, trace clay, nonplastic, stiff, moist, gray to white.		
35				SS	2	9 13	50	(36') SILT with sand (ML); few fine-coarse sand, mostly silt, trace clay, nonplastic, stiff, moist, yellowish-brown to white, abundant mica, quartz, laminated.	PB-2 (36-38)	380
				SS	1	7 10 11 15		(38') Well-graded SAND (SW); mostly fine-coarse grained sand, few silt, trace clay, very dense, moist, brown to dark gray, black mottles, quartz.	PB-2 (38-40)	
						9 15 32 33		(39') Top of PWR.		
40						8 13 15 17				375
						13 18 20 32				
						30 50/5.5				

NOTES: PB-2D is a stickup well.
NA = Not Applicable

Boring log revised with new survey data dated 7/23/2020.

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Client: Georgia Power Company
Project: Plant Branch CCR Landfill Site Investigation
Address: 1100 Milledgeville Rd, Milledgeville

WELL LOG
Well No. PB-2D
Page: 3 of 4

Drilling Start Date:	**11/29/2018**	Boring Depth (ft):	**61**	Well Depth (ft):	**57**
Drilling End Date:	**12/04/2018**	Boring Diameter (in):	**6.50**	Well Diam. (in)/Screen Slot (in):	**2.0/0.010**
Drilling Company:	**Thompson Engineering**	Static Water Level (ft):	**39.50**	Riser Material:	**Sch 40 PVC**
Drilling Method:	**Hollow Stem Auger**	DTW After Drilling (ft):	**12.40**	Screen Material:	**Sch 40 PVC Slotted**
Drilling Equipment:	**D-50**	Top of Casing Elev. (ft):	**416.71**	Sanitary Seal:	**Bentonite Pellets**
Driller:	**Phil Pitts**	Ground Elev. (ft):	**414.9**	Filter Pack:	**Sand**
Logged By:	**Nardos Tilahun**	Location (X,Y):	**1164853.6, 2556914.2**	Sampling Method(s):	**SS/SH/CO**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT: Sample Type	COLLECT: Recovery (ft)	COLLECT: Blow Counts	COLLECT: N Value RQD (%)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: Lab Sample	ELEV. (ft msl)
40				SS	0.2	50/2.5		(42.9') Auger refusal.		
				CO	2.75		64	(43') MET ROCK (GNEISS); moderately bedded, fresh, hard, slightly fractured, dark gray to white, dark biotite and white feldspar minerals, strong, dark and light banding, trace red, flow banding, slightly decomposed near top, competent, fine to medium grain. Cable tool (rock coring) started at 43 ft below ground surface.		
45										370
				CO	4.3		87	(46.5') MET ROCK (GNEISS); moderately bedded, fresh, hard, unfractured, dark gray to white, dark biotite and white feldspar minerals, strong, dark and light banding, flow banding, competent, medium to coarse grain.		
50								Couldn't retrieve core, redrilled with new core catcher and bit, then retrieved core, as a result Run 3 has several mechanical fractures.		365
				CO	3.3		66	(51') MET ROCK (GNEISS); fresh, hard, unfractured, dark white, dark biotite and white feldspar minerals, strong, dark and light banding, flow banding, competent, medium to coarse grain, several mechanical breaks from redrilling. 51-52 ft was drilled (not cored) due to a weathered layer (mostly sand) jamming core bit.		
55										360
				CO	4.75		95	(56') MET ROCK (GNEISS); fresh, hard, unfractured, dark white, dark biotite and white feldspar minerals, strong, dark and light banding, flow banding, competent, medium to coarse grain.		
60										355

NOTES: PB-2D is a stickup well.
NA = Not Applicable

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Address: 1100 Milledgeville Rd, Milledgeville

WELL LOG
Well No. PB-2D
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Drilling Start Date:	**11/29/2018**	Boring Depth (ft):	**61**	Well Depth (ft):	**57**
Drilling End Date:	**12/04/2018**	Boring Diameter (in):	**6.50**	Well Diam. (in)/Screen Slot (in):	**2.0/0.010**
Drilling Company:	**Thompson Engineering**	Static Water Level (ft):	**39.50**	Riser Material:	**Sch 40 PVC**
Drilling Method:	**Hollow Stem Auger**	DTW After Drilling (ft):	**12.40**	Screen Material:	**Sch 40 PVC Slotted**
Drilling Equipment:	**D-50**	Top of Casing Elev. (ft):	**416.71**	Sanitary Seal:	**Bentonite Pellets**
Driller:	**Phil Pitts**	Ground Elev. (ft):	**414.9**	Filter Pack:	**Sand**
Logged By:	**Nardos Tilahun**	Location (X,Y):	**1164853.6, 2556914.2**	Sampling Method(s):	**SS/SH/CO**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT: Sample Type	COLLECT: Recovery (ft)	COLLECT: Blow Counts	COLLECT: N Value RQD (%)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: Lab Sample	ELEV. (ft msl)
60										
								(61') Boring terminated. Well installed on 12/05/2018		
65										350

NOTES: PB-2D is a stickup well.
NA = Not Applicable

Easting and Northing in NAD 83.
Elevation in NAVD 88.

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WELL LOG
Well No. PB-4S/PB-4D
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Drilling Start Date:	01/14/2019	Boring Depth (ft):	121	Well Depth (ft):	48/114.5
Drilling End Date:	01/16/2019	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	31.54/29.62	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	31.70/31.00	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	CME-550	Top of Casing Elev. (ft):	411.15(PB-4S) 412.12(PB-4D)	Sanitary Seal:	Bentonite Pellets
Driller:	Stan White	Ground Elev. (ft):	409.3(PB-4S) 409.0(PB-4D)	Filter Pack:	Sand
Logged By:	Joseph Ivanowski	Location (X,Y):	1164335.1, 2556069.2(PB-4S) 1164339.6, 2556060.7(PB-4D)	Sampling Method(s):	SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT: Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: Lab Sample	ELEV. (ft msl)
0				SS	1.34	1 1 3 4	4	(0') Clayey SAND (SC); some fine-coarse grained sand, some silt, little clay, moist, reddish.	PB-4 (0-2)	
				SS	1.76	1 6 8 11	14	(2') Lean CLAY (CL); trace fine sand, mostly clay, medium plasticity, stiff, moist, dark reddish, micaceous with trace quartz fragments.	PB-4 (2-4)	
5				SS	1.76	3 5 8 10	13		PB-4 (4-6)	405
				SS	1.66	5 4 7 10	11	(6') Elastic SILT (MH); little fine sand, mostly silt, trace clay, low plasticity, stiff, moist, dark reddish, more micaceous.	PB-4 (6-8)	
				SS	1.5	2 3 5 5	8		PB-4 (8-10)	400
10				SS	1.76	3 4 5 14	9	(11') Silty SAND (SM); mostly fine grained sand, trace coarse gravel, some silt, trace clay, dense, dry, mottled red to pink brown, trace quartz gravel.	PB-4 (10-12)	
				SS	2	2 3 5 7	8	(12') Silty SAND (SM); mostly fine grained sand, trace coarse gravel, some silt, trace clay, moist, yellowish-white, 1 inch thick clay lens 14.6 to 14.7.	PB-4 (12-14)	
				SS	1.58	3 4 5 4	9			395
15								Attempted Shelby Tube, only 10 in recovery, discarded.		
				SH	1.92					390
20										

NOTES: PB-4S and PB-4D are stickup wells, PB-4S is ~10ft away from PB-4D well.
NA = Not Applicable

Boring log revised with new survey data dated 7/23/2020.

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WELL LOG
Well No. PB-4S/PB-4D
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Drilling Start Date:	01/14/2019	Boring Depth (ft):	121	Well Depth (ft):	48/114.5
Drilling End Date:	01/16/2019	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	31.54/29.62	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	31.70/31.00	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	CME-550	Top of Casing Elev. (ft):	411.15(PB-4S) 412.12(PB-4D)	Sanitary Seal:	Bentonite Pellets
Driller:	Stan White	Ground Elev. (ft):	409.3(PB-4S) 409.0(PB-4D)	Filter Pack:	Sand
Logged By:	Joseph Ivanowski	Location (X,Y):	1164335.1, 2556069.2(PB-4S) 1164339.6, 2556060.7(PB-4D)	Sampling Method(s):	SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT: Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: Lab Sample	ELEV. (ft msl)
20				SS	2	3 5 9 12	14	(20') Silty SAND (SM); mostly fine grained sand, trace coarse gravel, some silt, trace clay, moist, yellowish-white, relict structure more pronounced.	PB-4 (20-22)	
				SS	2	6 7 8 13	15		PB-4 (22-24)	
				SS	2	5 7 8 15	15	(24.5') SILT from 24.5 to 25 ft.	PB-4 (24-26)	385
25				SS	2	5 7 10 13	17	(25') SILT with sand (ML); trace coarse gravel, some fine-coarse sand, mostly silt, nonplastic, very stiff, moist, mottled pale brown to gray to white, relict rock fabric.	PB-4 (26-28)	
				SS	2	8 11 13 16	24		PB-4 (28-30)	380
30				SS	2	7 10 14 17	24		PB-4 (30-32)	
				SS	2	7 10 15 18	25	(31') SILT with sand (ML); trace coarse gravel, some fine-coarse sand, mostly silt, nonplastic, very stiff, wet, pale brown, rock fabric becoming stronger.	PB-4 (32-34)	
				SS	2	8 11 15 20	26	(34') Sandy zone of weathered rock at 33.7 ft.	PB-4 (34-36)	375
35				SS	1.58	8 15 19 30	34	(36') Very stiff, grading to PWR.	PB-4 (36-38)	
				SS	1.66	12 30 50/5	80		PB-4 (38-40)	370
40								(39') Top of PWR.		

NOTES: PB-4S and PB-4D are stickup wells, PB-4S is ~10ft away from PB-4D well.
NA = Not Applicable

Boring log revised with new survey data dated 7/23/2020.

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WELL LOG
Well No. PB-4S/PB-4D
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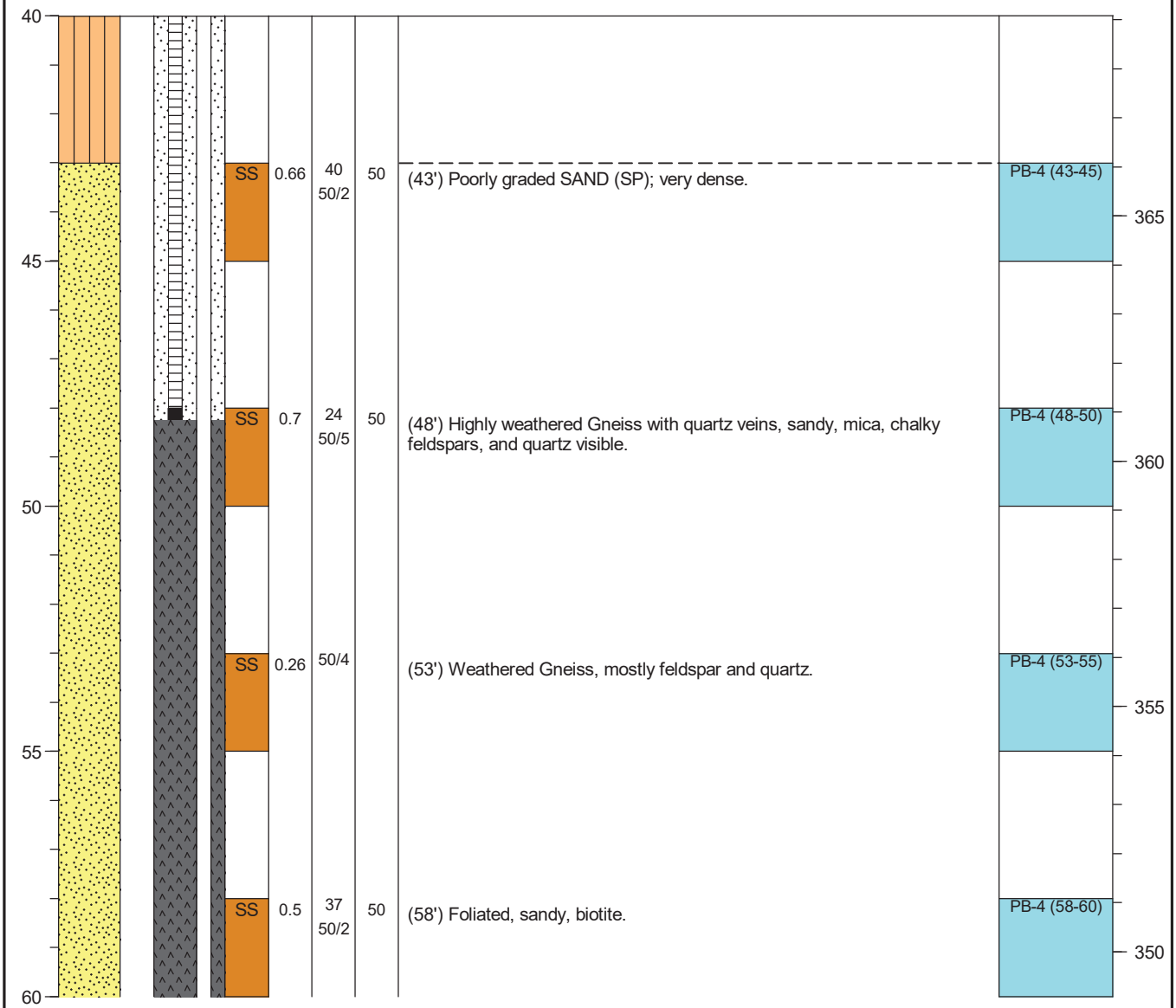
Drilling Start Date:	01/14/2019	Boring Depth (ft):	121	Well Depth (ft):	48/114.5
Drilling End Date:	01/16/2019	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	31.54/29.62	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	31.70/31.00	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	CME-550	Top of Casing Elev. (ft):	411.15(PB-4S) 412.12(PB-4D)	Sanitary Seal:	Bentonite Pellets
Driller:	Stan White	Ground Elev. (ft):	409.3(PB-4S) 409.0(PB-4D)	Filter Pack:	Sand
Logged By:	Joseph Ivanowski	Location (X,Y):	1164335.1, 2556069.2(PB-4S) 1164339.6, 2556060.7(PB-4D)	Sampling Method(s):	SS/SH/CO



NOTES: PB-4S and PB-4D are stickup wells, PB-4S is ~10ft away from PB-4D well.
NA = Not Applicable

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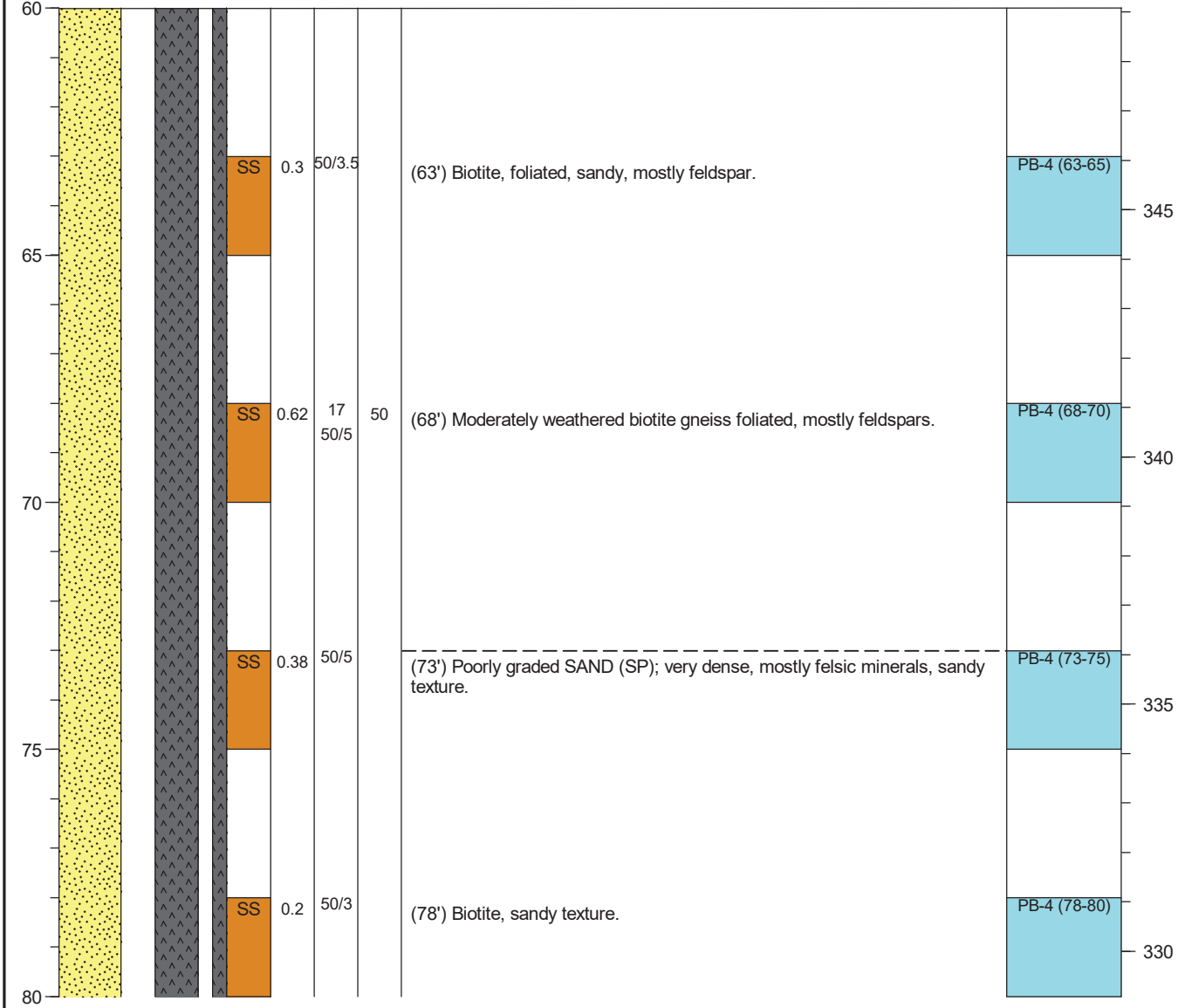
Drilling Start Date:	01/14/2019	Boring Depth (ft):	121	Well Depth (ft):	48/114.5
Drilling End Date:	01/16/2019	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	31.54/29.62	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	31.70/31.00	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	CME-550	Top of Casing Elev. (ft):	411.15(PB-4S) 412.12(PB-4D)	Sanitary Seal:	Bentonite Pellets
Driller:	Stan White	Ground Elev. (ft):	409.3(PB-4S) 409.0(PB-4D)	Filter Pack:	Sand
Logged By:	Joseph Ivanowski	Location (X,Y):	1164335.1, 2556069.2(PB-4S) 1164339.6, 2556060.7(PB-4D)	Sampling Method(s):	SS/SH/CO



NOTES: PB-4S and PB-4D are stickup wells, PB-4S is ~10ft away from PB-4D well.
NA = Not Applicable

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Drilling Start Date:	01/14/2019	Boring Depth (ft):	121	Well Depth (ft):	48/114.5
Drilling End Date:	01/16/2019	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	31.54/29.62	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	31.70/31.00	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	CME-550	Top of Casing Elev. (ft):	411.15(PB-4S) 412.12(PB-4D)	Sanitary Seal:	Bentonite Pellets
Driller:	Stan White	Ground Elev. (ft):	409.3(PB-4S) 409.0(PB-4D)	Filter Pack:	Sand
Logged By:	Joseph Ivanowski	Location (X,Y):	1164335.1, 2556069.2(PB-4S) 1164339.6, 2556060.7(PB-4D)	Sampling Method(s):	SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT: Sample Type	COLLECT: Recovery (ft)	COLLECT: Blow Counts	COLLECT: N Value RQD (%)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: Lab Sample	ELEV. (ft msl)
80										
				SS	0.58	44 50/3.5	50	(83') Biotite, sandy, predominately mafic minerals.	PB-4 (83-85)	325
85										
				SS	0.16	50/4		(88') Mostly felsic minerals, sandy.	PB-4 (88-90)	320
90										
				SS	0.04	50/0.5		(94') Hard, mostly quartz and feldspar.	PB-4 (93-95)	315
95								(96') Began mud rotary drilling.		
										310
100										

NOTES: PB-4S and PB-4D are stickup wells, PB-4S is ~10ft away from PB-4D well.
NA = Not Applicable

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Drilling Start Date:	01/14/2019	Boring Depth (ft):	121	Well Depth (ft):	48/114.5
Drilling End Date:	01/16/2019	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	31.54/29.62	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	31.70/31.00	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	CME-550	Top of Casing Elev. (ft):	411.15(PB-4S) 412.12(PB-4D)	Sanitary Seal:	Bentonite Pellets
Driller:	Stan White	Ground Elev. (ft):	409.3(PB-4S) 409.0(PB-4D)	Filter Pack:	Sand
Logged By:	Joseph Ivanowski	Location (X,Y):	1164335.1, 2556069.2(PB-4S) 1164339.6, 2556060.7(PB-4D)	Sampling Method(s):	SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT: Sample Type	COLLECT: Recovery (ft)	COLLECT: Blow Counts	COLLECT: N Value RQD (%)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: Lab Sample	ELEV. (ft msl)
100										
				CO	2		55	(104') MET ROCK (GNEISS); fresh, hard, very slightly fractured, dark gray, some quartz and feldspar, phenocrysts, weak banding, low angle fractures at 104.5 and 106 ft.		305
105				CO	9.7		89			
										300
110								(110') Low angle fractures, some healed high angle fractures, very few fractures, very hard, fractures at 110, 111, and 113.5 ft.		
										295
115				CO	5		100	(116') No natural fractures from 116 to 121 ft.		
										290
120										

NOTES: PB-4S and PB-4D are stickup wells, PB-4S is ~10ft away from PB-4D well.
NA = Not Applicable

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WELL LOG
Well No. PB-4S/PB-4D
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Drilling Start Date:	**01/14/2019**	Boring Depth (ft):	**121**	Well Depth (ft):	**48/114.5**
Drilling End Date:	**01/16/2019**	Boring Diameter (in):	**6.50**	Well Diam. (in)/Screen Slot (in):	**2.0/0.010**
Drilling Company:	**Thompson Engineering**	Static Water Level (ft):	**31.54/29.62**	Riser Material:	**Sch 40 PVC**
Drilling Method:	**Hollow Stem Auger**	DTW After Drilling (ft):	**31.70/31.00**	Screen Material:	**Sch 40 PVC Slotted**
Drilling Equipment:	**CME-550**	Top of Casing Elev. (ft):	**411.15(PB-4S) 412.12(PB-4D)**	Sanitary Seal:	**Bentonite Pellets**
Driller:	**Stan White**	Ground Elev. (ft):	**409.3(PB-4S) 409.0(PB-4D)**	Filter Pack:	**Sand**
Logged By:	**Joseph Ivanowski**	Location (X,Y):	**1164335.1, 2556069.2(PB-4S) 1164339.6, 2556060.7(PB-4D)**	Sampling Method(s):	**SS/SH/CO**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT: Sample Type	COLLECT: Recovery (ft)	COLLECT: Blow Counts	COLLECT: N Value RQD (%)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: Lab Sample	ELEV. (ft msl)
120										
								(121') Boring terminated. Well installed on 01/17/2019		
125										285

NOTES: PB-4S and PB-4D are stickup wells, PB-4S is ~10ft away from PB-4D well.
NA = Not Applicable

Easting and Northing in NAD 83.
Elevation in NAVD 88.

Boring log revised with new survey data dated 7/23/2020.

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Address: 1100 Milledgeville Rd, Milledgeville

WELL LOG
Well No. PB-7S/PB-7
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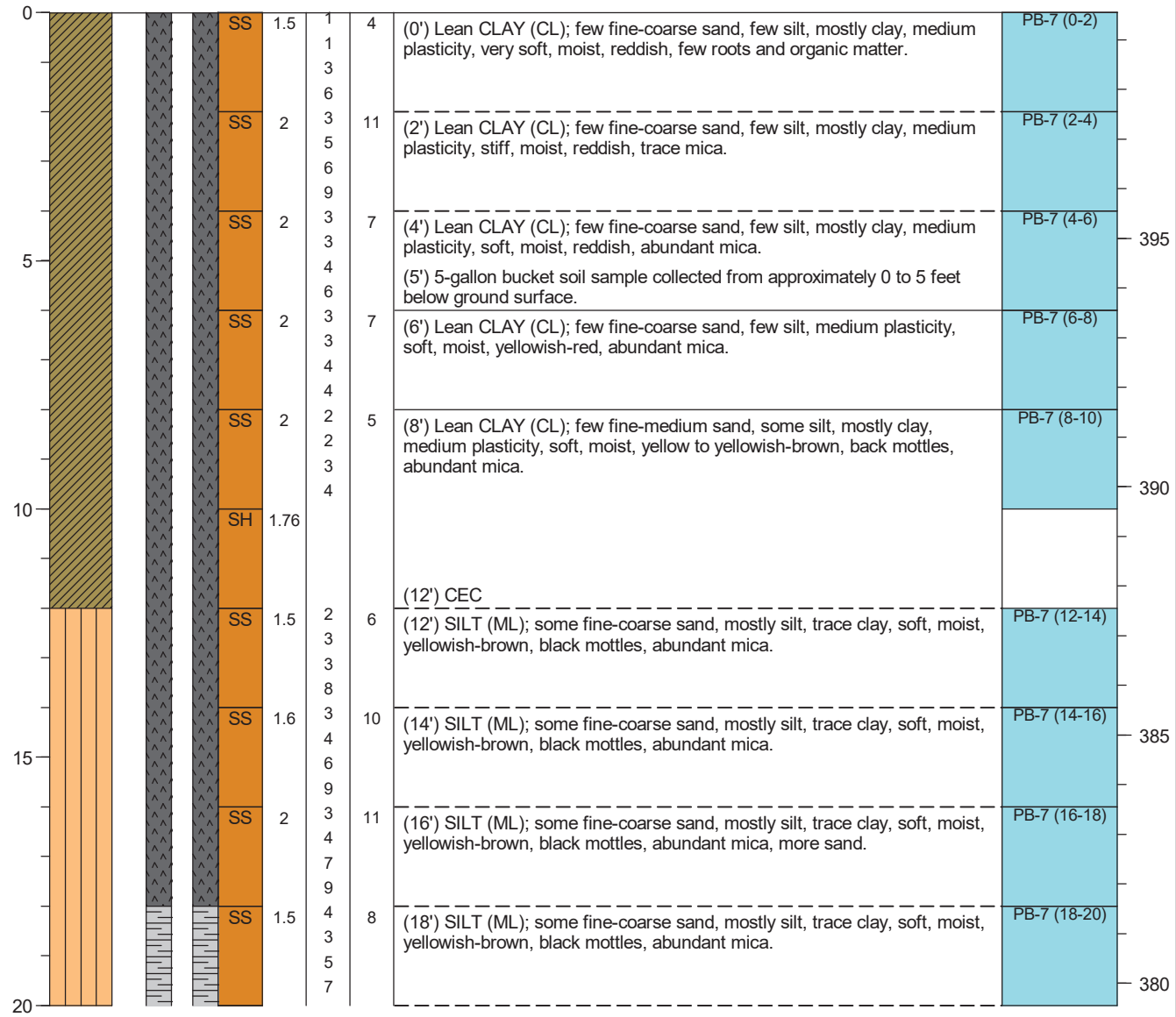
Drilling Start Date:	01/10/2019	Boring Depth (ft):	59.6	Well Depth (ft):	33
Drilling End Date:	01/14/2019	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	24.51/NA	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	24.60/NA	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	D-50	Top of Casing Elev. (ft)	402.88/NA	Sanitary Seal:	Bentonite Pellets
Driller:	Phil Pitts	Ground Elev. (ft):	399.7/NA	Filter Pack:	Sand
Logged By:	Nardos Tilahun	Location (X,Y):	1163831.3, 2556186.2	Sampling Method(s):	SS/SH/CO



DEPTH (ft)	Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)	SOIL/ROCK VISUAL DESCRIPTION	Lab Sample	ELEV. (ft msl)
0	SS	1.5	1 1 3 6	4	(0') Lean CLAY (CL); few fine-coarse sand, few silt, mostly clay, medium plasticity, very soft, moist, reddish, few roots and organic matter.	PB-7 (0-2)	
	SS	2	3 5 6 9	11	(2') Lean CLAY (CL); few fine-coarse sand, few silt, mostly clay, medium plasticity, stiff, moist, reddish, trace mica.	PB-7 (2-4)	
	SS	2	3 3 4 6	7	(4') Lean CLAY (CL); few fine-coarse sand, few silt, mostly clay, medium plasticity, soft, moist, reddish, abundant mica. (5') 5-gallon bucket soil sample collected from approximately 0 to 5 feet below ground surface.	PB-7 (4-6)	395
	SS	2	3 3 4 4	7	(6') Lean CLAY (CL); few fine-coarse sand, few silt, medium plasticity, soft, moist, yellowish-red, abundant mica.	PB-7 (6-8)	
	SS	2	2 2 3 4	5	(8') Lean CLAY (CL); few fine-medium sand, some silt, mostly clay, medium plasticity, soft, moist, yellow to yellowish-brown, back mottles, abundant mica.	PB-7 (8-10)	390
10	SH	1.76			(12') CEC		
	SS	1.5	2 3 3 8	6	(12') SILT (ML); some fine-coarse sand, mostly silt, trace clay, soft, moist, yellowish-brown, black mottles, abundant mica.	PB-7 (12-14)	
	SS	1.6	3 4 6 9	10	(14') SILT (ML); some fine-coarse sand, mostly silt, trace clay, soft, moist, yellowish-brown, black mottles, abundant mica.	PB-7 (14-16)	385
15	SS	2	3 4 7 9	11	(16') SILT (ML); some fine-coarse sand, mostly silt, trace clay, soft, moist, yellowish-brown, black mottles, abundant mica, more sand.	PB-7 (16-18)	
	SS	1.5	4 3 5 7	8	(18') SILT (ML); some fine-coarse sand, mostly silt, trace clay, soft, moist, yellowish-brown, black mottles, abundant mica.	PB-7 (18-20)	380
20							

NOTES: PB-7S is a stickup well located ~10ft away from PB-7 borehole.
NA = Not Applicable

Boring log revised with new survey data dated 7/23/2020.

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WELL LOG
Well No. PB-7S/PB-7
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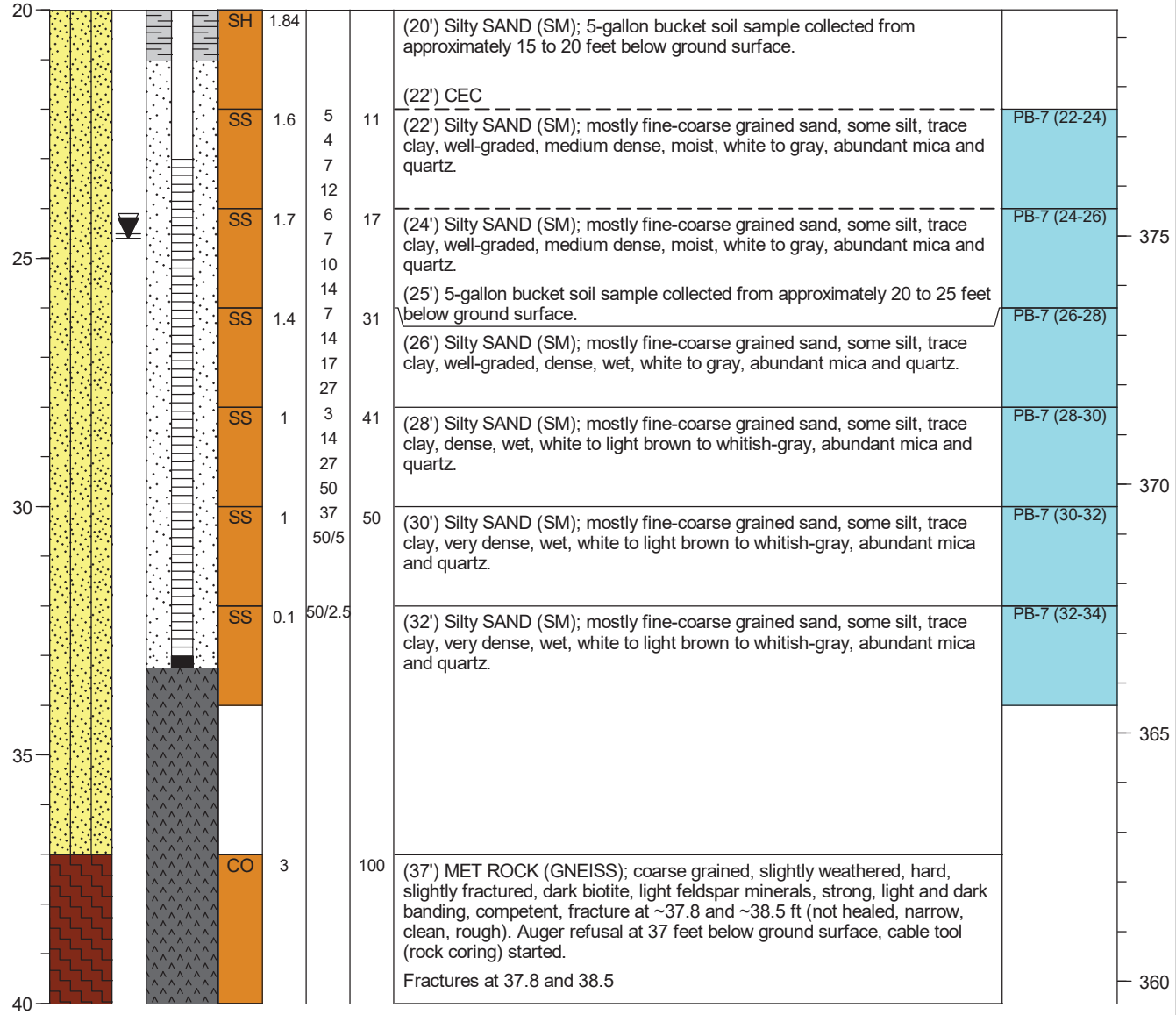
Drilling Start Date:	01/10/2019	Boring Depth (ft):	59.6	Well Depth (ft):	33
Drilling End Date:	01/14/2019	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	24.51/NA	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	24.60/NA	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	D-50	Top of Casing Elev. (ft)	402.88/NA	Sanitary Seal:	Bentonite Pellets
Driller:	Phil Pitts	Ground Elev. (ft):	399.7/NA	Filter Pack:	Sand
Logged By:	Nardos Tilahun	Location (X,Y):	1163831.3, 2556186.2	Sampling Method(s):	SS/SH/CO



NOTES: PB-7S is a stickup well located ~10ft away from PB-7 borehole.
NA = Not Applicable

Boring log revised with new survey data dated 7/23/2020.

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WELL LOG
Well No. PB-7S/PB-7
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Drilling Start Date:	**01/10/2019**	Boring Depth (ft):	**59.6**	Well Depth (ft):	**33**
Drilling End Date:	**01/14/2019**	Boring Diameter (in):	**6.50**	Well Diam. (in)/Screen Slot (in):	**2.0/0.010**
Drilling Company:	**Thompson Engineering**	Static Water Level (ft):	**24.51/NA**	Riser Material:	**Sch 40 PVC**
Drilling Method:	**Hollow Stem Auger**	DTW After Drilling (ft):	**24.60/NA**	Screen Material:	**Sch 40 PVC Slotted**
Drilling Equipment:	**D-50**	Top of Casing Elev. (ft)	**402.88/NA**	Sanitary Seal:	**Bentonite Pellets**
Driller:	**Phil Pitts**	Ground Elev. (ft):	**399.7/NA**	Filter Pack:	**Sand**
Logged By:	**Nardos Tilahun**	Location (X,Y):	**1163831.3, 2556186.2**	Sampling Method(s):	**SS/SH/CO**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT: Sample Type	COLLECT: Recovery (ft)	COLLECT: Blow Counts	COLLECT: N Value RQD (%)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: Lab Sample	ELEV. (ft msl)
40				CO	5		100	(40') MET ROCK (GNEISS); coarse grained, fresh, hard, unfractured, dark biotite, light feldspar minerals, strong, light and dark banding, competent, mechanical break.		355
45				CO	4.5		90	(45') MET ROCK (GNEISS); coarse grained, fresh, hard, unfractured, dark biotite, light feldspar minerals, strong, light and dark banding, competent, mechanical break.		350
50				CO	5		100	(50') MET ROCK (GNEISS); coarse grained, fresh, hard, unfractured, dark biotite, light feldspar minerals, strong, light and dark banding, competent, mechanical break.		345
55				CO	4.6		100	(55') MET ROCK (GNEISS); coarse grained, fresh, hard, unfractured, dark biotite, light feldspar minerals, strong, light and dark banding, competent, mechanical break.		340
60								(59.6') Boring terminated. Well installed on 01/14/2019		

NOTES: PB-7S is a stickup well located ~10ft away from PB-7 borehole.
NA = Not Applicable

Easting and Northing in NAD 83.
Elevation in NAVD 88.

Boring log revised with new survey data dated 7/23/2020.

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WELL LOG
Well No. PB-8S/PB-8D
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Drilling Start Date:	01/06/2019	Boring Depth (ft):	106	Well Depth (ft):	35/106
Drilling End Date:	01/08/2019	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	22.05/22.11	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	22.60/14.00	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	D-50	Top of Casing Elev. (ft):	401.82(PB-8S) 401.74(PB-8D)	Sanitary Seal:	Bentonite Pellets
Driller:	Phil Pitts	Ground Elev. (ft):	398.6(PB-8S) 398.2(PB-8D)	Filter Pack:	Sand
Logged By:	Nardos Tilahun	Location (X,Y):	1163018.2, 2556792.3(PB-8S) 1163024.4, 2556786.7(PB-8D)	Sampling Method(s):	SS/SH/CO

DEPTH (ft)	Sample Type	Recovery (ft)	Blow Counts	N Value / RQD (%)	SOIL/ROCK VISUAL DESCRIPTION	Lab Sample	ELEV. (ft msl)
0	SS	2	3 4 3 4	7	(0') Elastic SILT (MH); trace fine-coarse sand, mostly silt, few clay, low plasticity, soft, moist, reddish, few roots and mica.		
	SS	2	3 4 6 9	10	(2') Elastic SILT (MH); trace fine-coarse sand, mostly silt, few clay, low plasticity, soft, moist, reddish, abundant mica.	PB-8 (2-4)	395
5	SS	2	5 8 11 14	19	(4') Elastic SILT (MH); trace fine-coarse sand, mostly silt, few clay, low plasticity, stiff, moist, reddish, black mottles. (5') 5-gallon bucket soil sample collected from approximately 0 to 5 feet below ground surface		
	SS	2	4 5 6 13	11	(6') Elastic SILT (MH); trace fine-coarse sand, mostly silt, few clay, low plasticity, stiff, moist, reddish, black mottles.		
	SS	2	3 3 5 10	8	(8') Elastic SILT with sand (MH); few fine-coarse sand, mostly silt, few clay, low plasticity, soft, moist, yellowish-brown, abundant mica.	PB-8 (8-10)	390
10	SH	0.84			Switched from 4 1/4 auger to 3 1/4 auger. Shelby tube discarded.		
	SS	2	3 2 4 7	6		PB-8 (12-12.5)	
	SH	1.58			(12.5') SILT (ML); few fine-coarse sand, mostly silt, few clay, nonplastic, soft, moist, yellowish-brown, abundant mica.	PB-8 (12.5-14)	385
15	SS	1.8	4 5 14 19	19	(16') Well-graded SAND (SW); mostly fine-coarse grained sand, some silt, trace clay, medium dense, wet, yellowish-brown, abundant mica and quartz.	PB-8 (16-18)	
	SS	1.5	7 7 12 15	19	(18') Well-graded SAND (SW); mostly fine-coarse grained sand, some silt, trace clay, medium dense, wet, yellowish-brown, abundant mica and quartz.	PB-8 (18-22)	380
20							

NOTES: PB-8S and PB-8D are stickup wells, PB-8S is ~10ft away from PB-8D well. Depth to water at PB-8S is 22.6 feet below ground surface.
NA = Not Applicable

Boring log revised with new survey data dated 7/23/2020.

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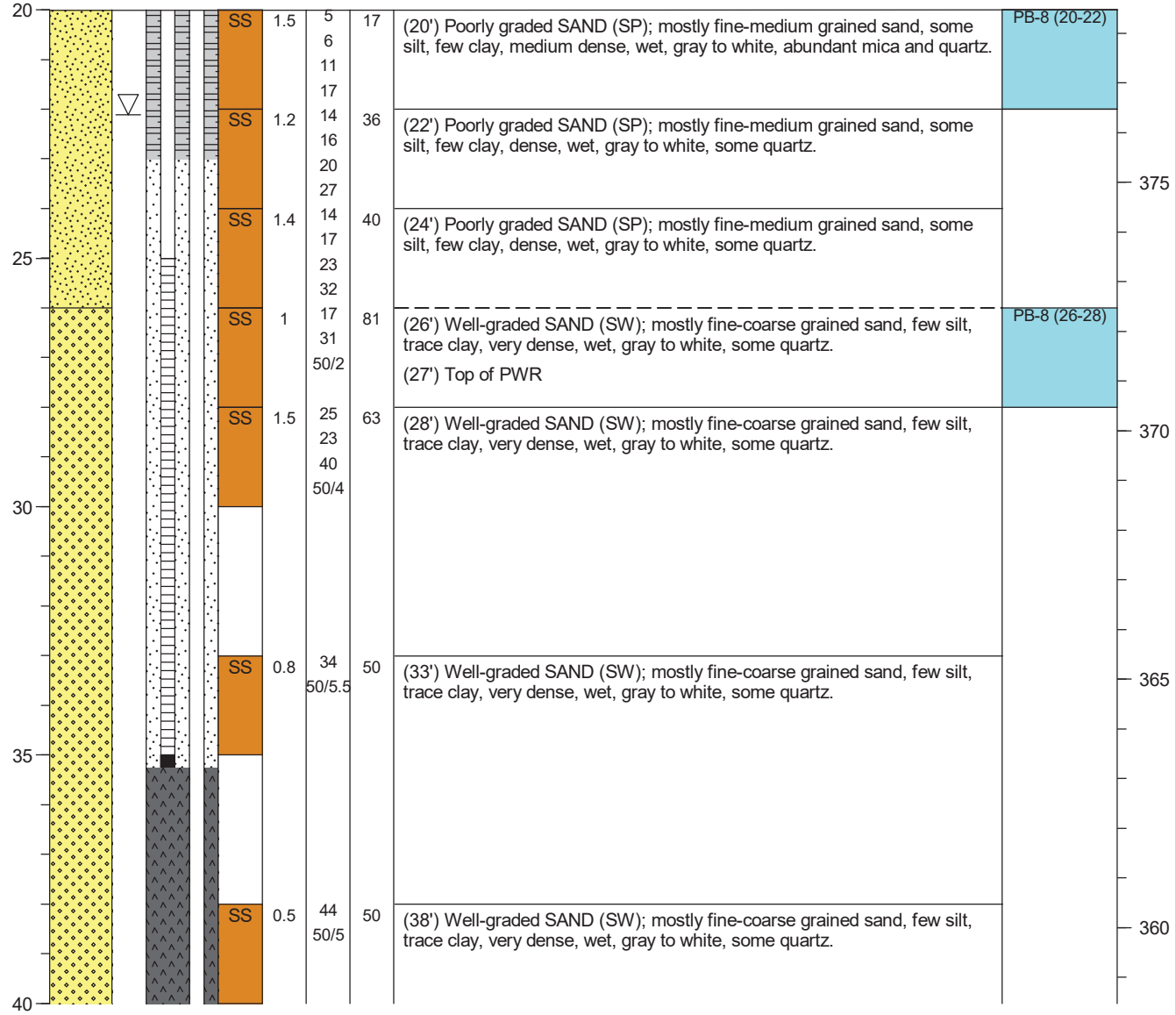
Drilling Start Date:	01/06/2019	Boring Depth (ft):	106	Well Depth (ft):	35/106
Drilling End Date:	01/08/2019	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	22.05/22.11	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	22.60/14.00	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	D-50	Top of Casing Elev. (ft):	401.82(PB-8S) 401.74(PB-8D)	Sanitary Seal:	Bentonite Pellets
Driller:	Phil Pitts	Ground Elev. (ft):	398.6(PB-8S) 398.2(PB-8D)	Filter Pack:	Sand
Logged By:	Nardos Tilahun	Location (X,Y):	1163018.2, 2556792.3(PB-8S) 1163024.4, 2556786.7(PB-8D)	Sampling Method(s):	SS/SH/CO



NOTES: PB-8S and PB-8D are stickup wells, PB-8S is ~10ft away from PB-8D well. Depth to water at PB-8S is 22.6 feet below ground surface.
NA = Not Applicable

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Drilling Start Date:	01/06/2019	Boring Depth (ft):	106	Well Depth (ft):	35/106
Drilling End Date:	01/08/2019	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	22.05/22.11	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	22.60/14.00	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	D-50	Top of Casing Elev. (ft):	401.82(PB-8S) 401.74(PB-8D)	Sanitary Seal:	Bentonite Pellets
Driller:	Phil Pitts	Ground Elev. (ft):	398.6(PB-8S) 398.2(PB-8D)	Filter Pack:	Sand
Logged By:	Nardos Tilahun	Location (X,Y):	1163018.2, 2556792.3(PB-8S) 1163024.4, 2556786.7(PB-8D)	Sampling Method(s):	SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT: Sample Type	COLLECT: Recovery (ft)	COLLECT: Blow Counts	COLLECT: N Value RQD (%)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: Lab Sample	ELEV. (ft msl)
40										355
45				SS	0.2	50/3.5		(43') Well-graded SAND (SW); mostly fine-coarse grained sand, few silt, trace clay, very dense, wet, gray to white, some quartz.		350
50				SS	0.3	50/3		(48') Well-graded SAND (SW); mostly fine-coarse grained sand, few silt, trace clay, very dense, wet, gray to white, some quartz.		345
55				SS	0.3	50/3.5		(53') Well-graded SAND (SW); mostly fine-coarse grained sand, few silt, trace clay, very dense, wet, gray to white, some quartz.		340
60				SS	0	50/2		(58') Well-graded SAND (SW); mostly fine-coarse grained sand, few silt, trace clay, very dense, wet, gray to white, some quartz.		

NOTES: PB-8S and PB-8D are stickup wells, PB-8S is ~10ft away from PB-8D well. Depth to water at PB-8S is 22.6 feet below ground surface.
NA = Not Applicable

Boring log revised with new survey data dated 7/23/2020.

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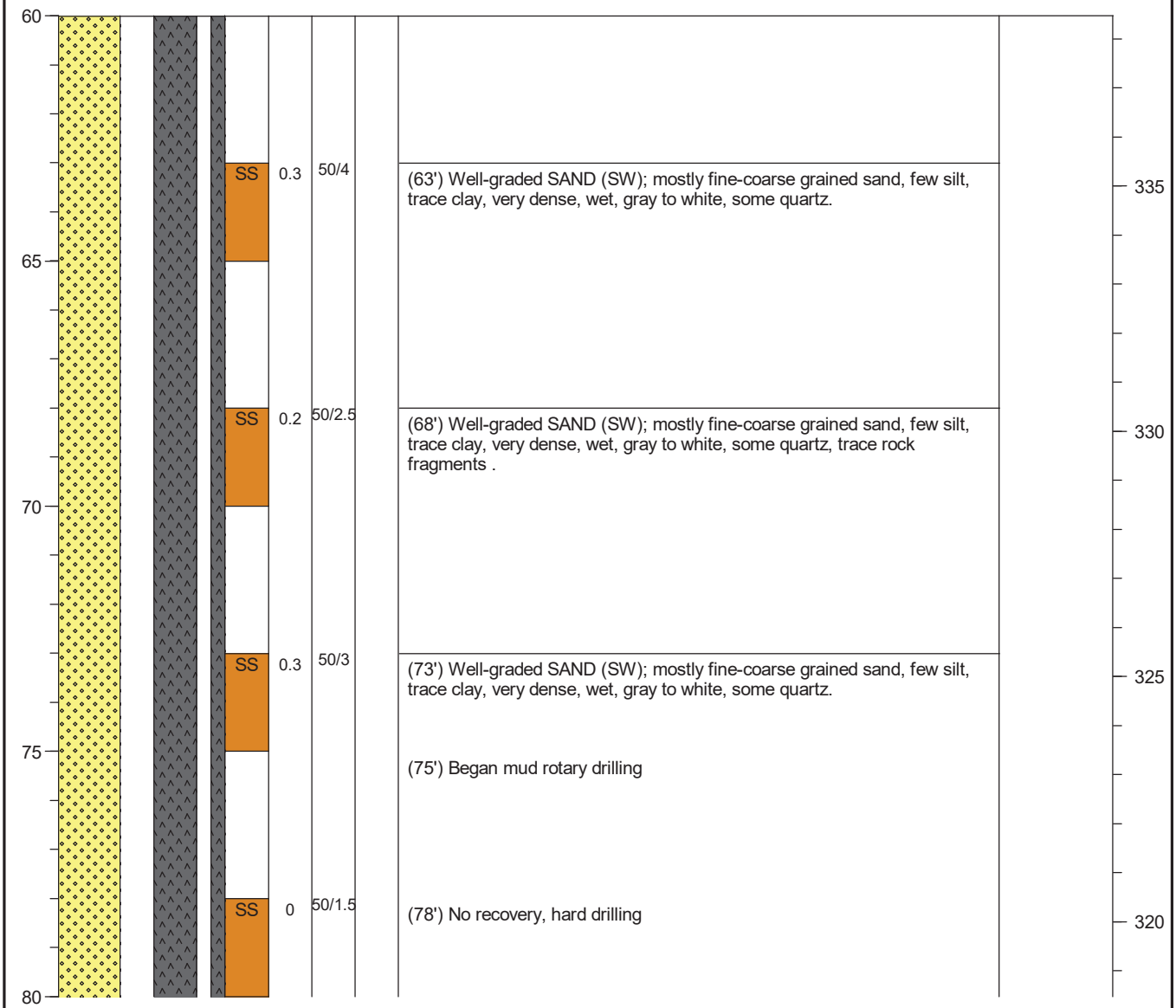
Drilling Start Date:	01/06/2019	Boring Depth (ft):	106	Well Depth (ft):	35/106
Drilling End Date:	01/08/2019	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	22.05/22.11	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	22.60/14.00	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	D-50	Top of Casing Elev. (ft):	401.82(PB-8S) 401.74(PB-8D)	Sanitary Seal:	Bentonite Pellets
Driller:	Phil Pitts	Ground Elev. (ft):	398.6(PB-8S) 398.2(PB-8D)	Filter Pack:	Sand
Logged By:	Nardos Tilahun	Location (X,Y):	1163018.2, 2556792.3(PB-8S) 1163024.4, 2556786.7(PB-8D)	Sampling Method(s):	SS/SH/CO



NOTES: PB-8S and PB-8D are stickup wells, PB-8S is ~10ft away from PB-8D well. Depth to water at PB-8S is 22.6 feet below ground surface.
NA = Not Applicable

Boring log revised with new survey data dated 7/23/2020.

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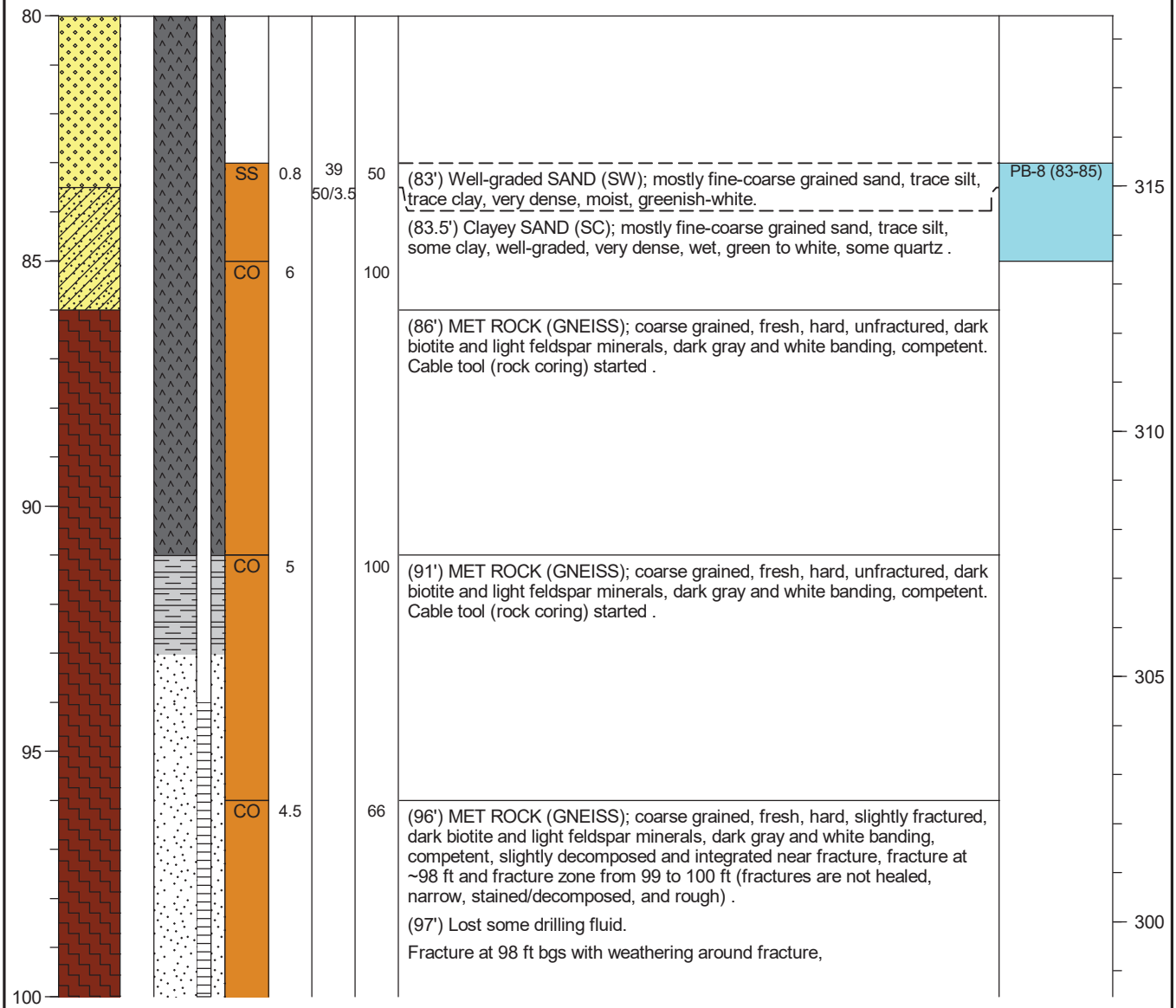
Drilling Start Date:	01/06/2019	Boring Depth (ft):	106	Well Depth (ft):	35/106
Drilling End Date:	01/08/2019	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	22.05/22.11	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	22.60/14.00	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	D-50	Top of Casing Elev. (ft):	401.82(PB-8S) 401.74(PB-8D)	Sanitary Seal:	Bentonite Pellets
Driller:	Phil Pitts	Ground Elev. (ft):	398.6(PB-8S) 398.2(PB-8D)	Filter Pack:	Sand
Logged By:	Nardos Tilahun	Location (X,Y):	1163018.2, 2556792.3(PB-8S) 1163024.4, 2556786.7(PB-8D)	Sampling Method(s):	SS/SH/CO



NOTES: PB-8S and PB-8D are stickup wells, PB-8S is ~10ft away from PB-8D well. Depth to water at PB-8S is 22.6 feet below ground surface.
NA = Not Applicable

Boring log revised with new survey data dated 7/23/2020.

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Drilling Start Date:	01/06/2019	Boring Depth (ft):	106	Well Depth (ft):	35/106
Drilling End Date:	01/08/2019	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	22.05/22.11	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	22.60/14.00	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	D-50	Top of Casing Elev. (ft):	401.82(PB-8S) 401.74(PB-8D)	Sanitary Seal:	Bentonite Pellets
Driller:	Phil Pitts	Ground Elev. (ft):	398.6(PB-8S) 398.2(PB-8D)	Filter Pack:	Sand
Logged By:	Nardos Tilahun	Location (X,Y):	1163018.2, 2556792.3(PB-8S) 1163024.4, 2556786.7(PB-8D)	Sampling Method(s):	SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT: Sample Type	COLLECT: Recovery (ft)	COLLECT: Blow Counts	COLLECT: N Value RQD (%)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: Lab Sample	ELEV. (ft msl)
100										
				CO	4.7		88	(101') MET ROCK (GNEISS); coarse grained, fresh, hard, slightly fractured, dark biotite and light feldspar minerals, dark gray and white banding, competent, slightly decomposed and integrated near fracture, fracture at ~103, 104.5, and 104.7 ft (fractures are not healed, narrow, stained/decomposed, and rough) . (102') Lost some drilling fluid Fracture at 103, 104.5, and 104.7 ft bgs.		295
105								(106') Boring terminated.		290
110										

NOTES: PB-8S and PB-8D are stickup wells, PB-8S is ~10ft away from PB-8D well. Depth to water at PB-8S is 22.6 feet below ground surface.
NA = Not Applicable

Easting and Northing in NAD 83.
Elevation in NAVD 88.

Boring log revised with new survey data dated 7/23/2020.

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WELL LOG
Well No. PB-10S/PB-10D
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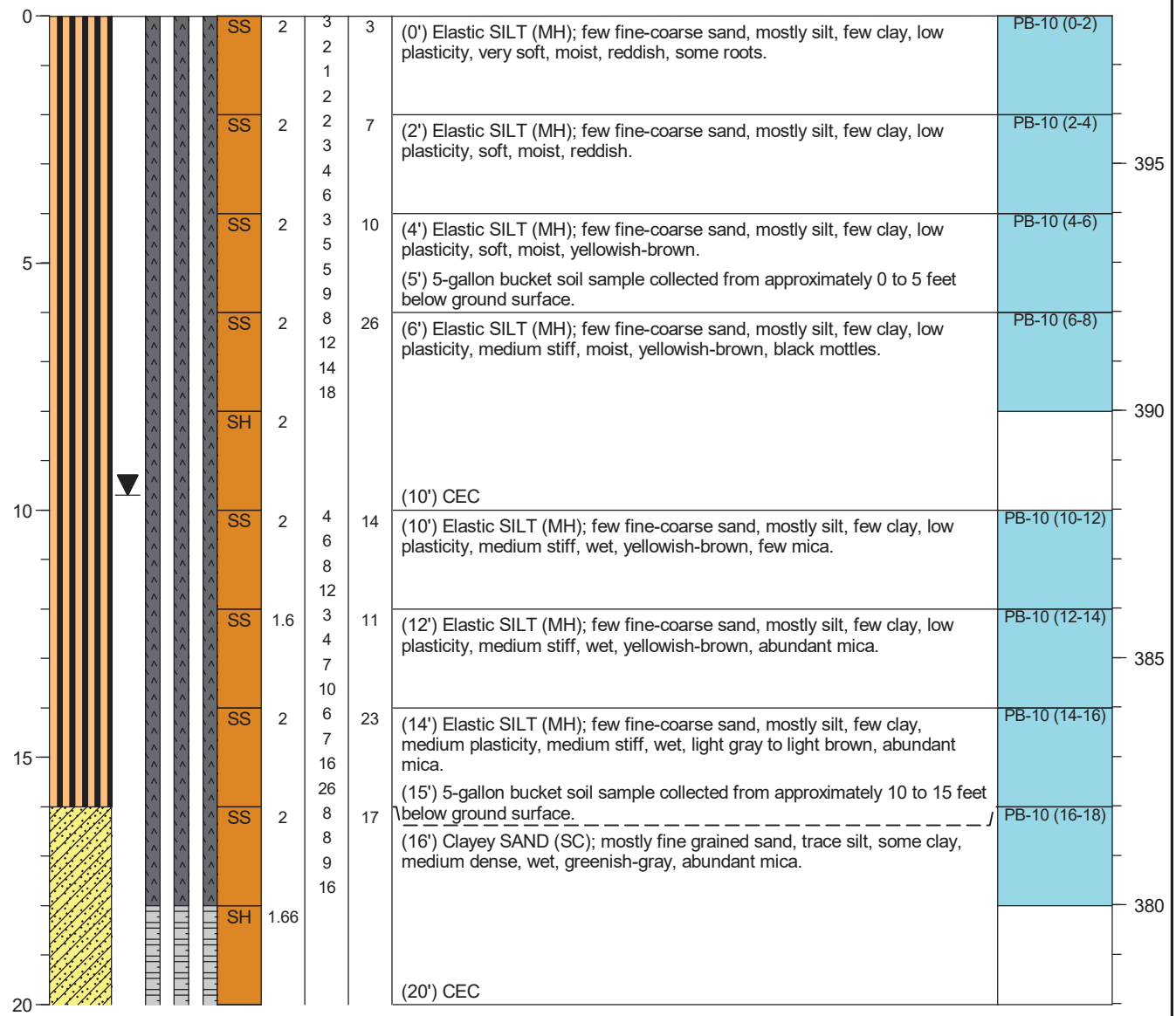
Drilling Start Date:	01/16/2019	Boring Depth (ft):	91	Well Depth (ft):	33/85
Drilling End Date:	01/17/2019	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	9.91/10.04	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	9.70/9.70	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	D-50	Top of Casing Elev. (ft):	400.91(PB-10S) 400.31(PB-10D)	Sanitary Seal:	Bentonite Pellets
Driller:	Phil Pitts	Ground Elev. (ft):	397.6(PB-10S) 397.5(PB-10D)	Filter Pack:	Sand
Logged By:	Nardos Tilahun	Location (X,Y):	1163588.9, 2558551.2(PB-10S) 1163593.4, 2558546.7(PB-10D)	Sampling Method(s):	SS/SH/CO



NOTES: PB-10S and PB-10D are stickup wells, PB-10S is ~10ft away from PB-10D well. Depth to water at PB-10S is 9.7 feet below ground surface.
NA = Not Applicable

Boring log revised with new survey data dated 7/23/2020.

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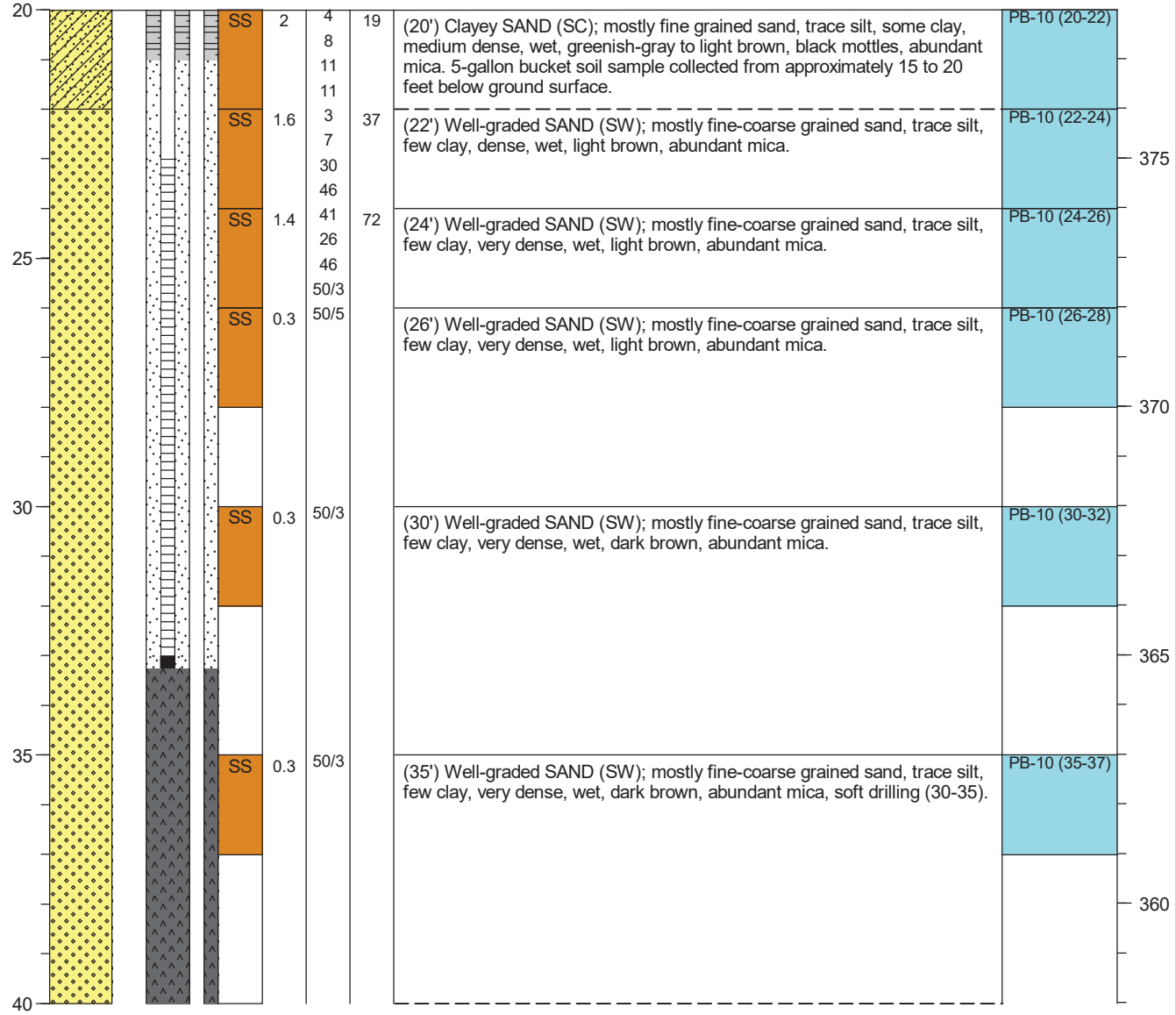
Drilling Start Date:	01/16/2019	Boring Depth (ft):	91	Well Depth (ft):	33/85
Drilling End Date:	01/17/2019	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	9.91/10.04	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	9.70/9.70	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	D-50	Top of Casing Elev. (ft):	400.91(PB-10S) 400.31(PB-10D)	Sanitary Seal:	Bentonite Pellets
Driller:	Phil Pitts	Ground Elev. (ft):	397.6(PB-10S) 397.5(PB-10D)	Filter Pack:	Sand
Logged By:	Nardos Tilahun	Location (X,Y):	1163588.9, 2558551.2(PB-10S) 1163593.4, 2558546.7(PB-10D)	Sampling Method(s):	SS/SH/CO



NOTES: PB-10S and PB-10D are stickup wells, PB-10S is ~10ft away from PB-10D well. Depth to water at PB-10S is 9.7 feet below ground surface.
NA = Not Applicable

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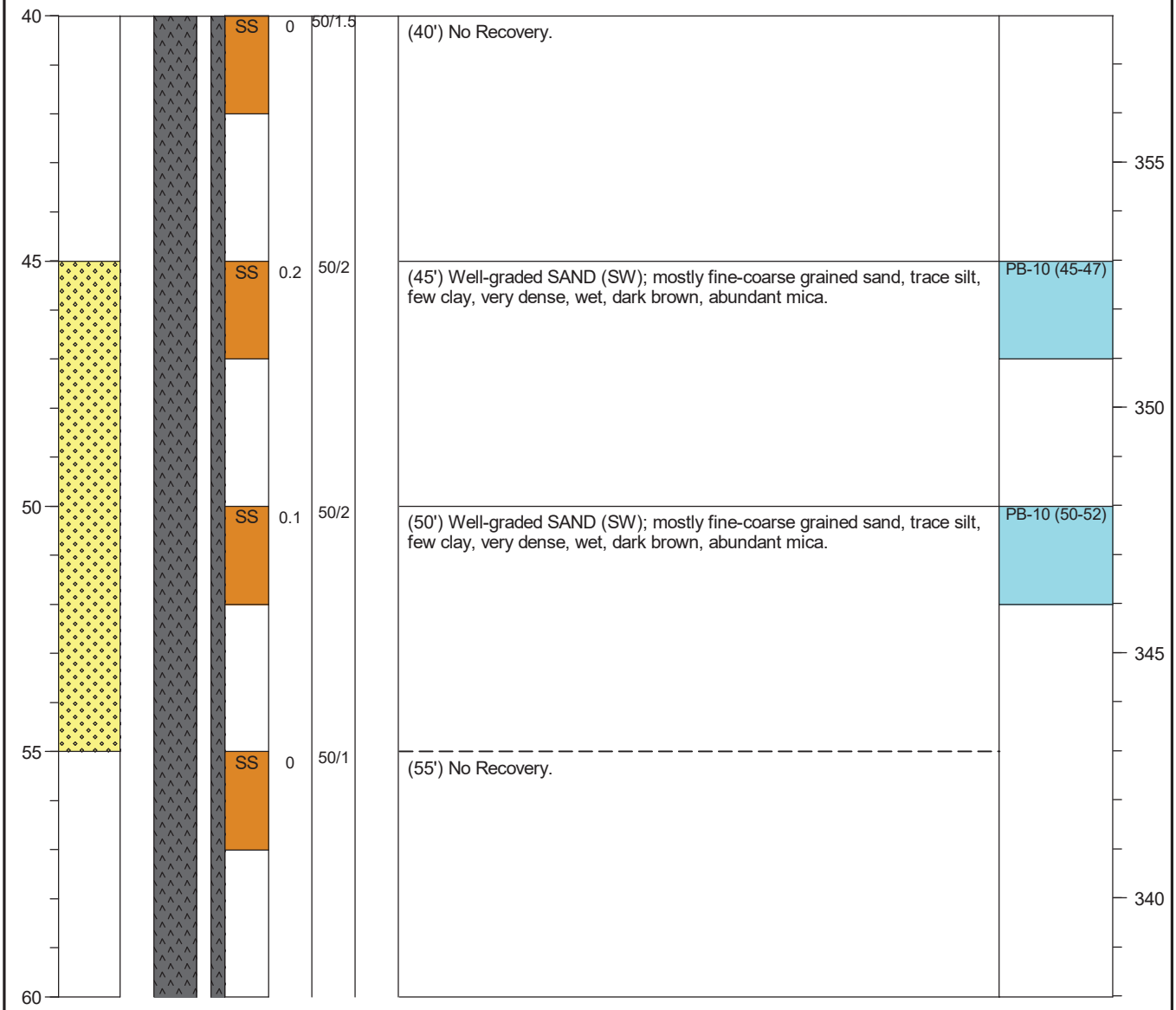
Drilling Start Date:	01/16/2019	Boring Depth (ft):	91	Well Depth (ft):	33/85
Drilling End Date:	01/17/2019	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	9.91/10.04	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	9.70/9.70	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	D-50	Top of Casing Elev. (ft):	400.91(PB-10S) 400.31(PB-10D)	Sanitary Seal:	Bentonite Pellets
Driller:	Phil Pitts	Ground Elev. (ft):	397.6(PB-10S) 397.5(PB-10D)	Filter Pack:	Sand
Logged By:	Nardos Tilahun	Location (X,Y):	1163588.9, 2558551.2(PB-10S) 1163593.4, 2558546.7(PB-10D)	Sampling Method(s):	SS/SH/CO



NOTES: PB-10S and PB-10D are stickup wells, PB-10S is ~10ft away from PB-10D well. Depth to water at PB-10S is 9.7 feet below ground surface.
NA = Not Applicable

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Drilling Start Date:	01/16/2019	Boring Depth (ft):	91	Well Depth (ft):	33/85
Drilling End Date:	01/17/2019	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	9.91/10.04	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	9.70/9.70	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	D-50	Top of Casing Elev. (ft):	400.91(PB-10S) 400.31(PB-10D)	Sanitary Seal:	Bentonite Pellets
Driller:	Phil Pitts	Ground Elev. (ft):	397.6(PB-10S) 397.5(PB-10D)	Filter Pack:	Sand
Logged By:	Nardos Tilahun	Location (X,Y):	1163588.9, 2558551.2(PB-10S) 1163593.4, 2558546.7(PB-10D)	Sampling Method(s):	SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT: Sample Type	COLLECT: Recovery (ft)	COLLECT: Blow Counts	COLLECT: N Value RQD (%)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: Lab Sample	ELEV. (ft msl)
60				SS	0.2	50/2		(60') Well-graded SAND (SW); mostly fine-coarse grained sand, trace silt, few clay, very dense, wet, dark brown, abundant mica.	PB-10 (60-62)	
								(62') Began mud rotary drilling.		
				SS	1.3	20 38 50/4	88	(63') Poorly graded SAND (SP); mostly fine-coarse grained sand, very dense, wet, light gray to white, weathered rock fragments (gneiss), abundant mica and quartz.	PB-10 (63-65)	335
65										
				CO	2.5		14	(67.5') MET ROCK (GNEISS); coarse grained, moderately weathered, moderately hard, intensely fractured, dark biotite and light feldspar banding, moderately decomposed near the top, fractures have Fe oxide staining and are narrow to wide. Cable tool (rock coring) started.		330
70				CO	3.5		20	(71') MET ROCK (GNEISS); coarse grained, moderately weathered, moderately hard, moderately fractured, dark biotite and light feldspar banding, moderately decomposed near fracture, fractures have clay filling and are narrow to wide.		325
75				CO	4.75		54	(76') MET ROCK (GNEISS); coarse grained, moderately weathered, moderately hard, moderately fractured, dark biotite and light feldspar banding, fractures have clay filling and Fe oxide staining and are narrow to wide.		320
80										

NOTES: PB-10S and PB-10D are stickup wells, PB-10S is ~10ft away from PB-10D well. Depth to water at PB-10S is 9.7 feet below ground surface.
NA = Not Applicable

Boring log revised with new survey data dated 7/23/2020.

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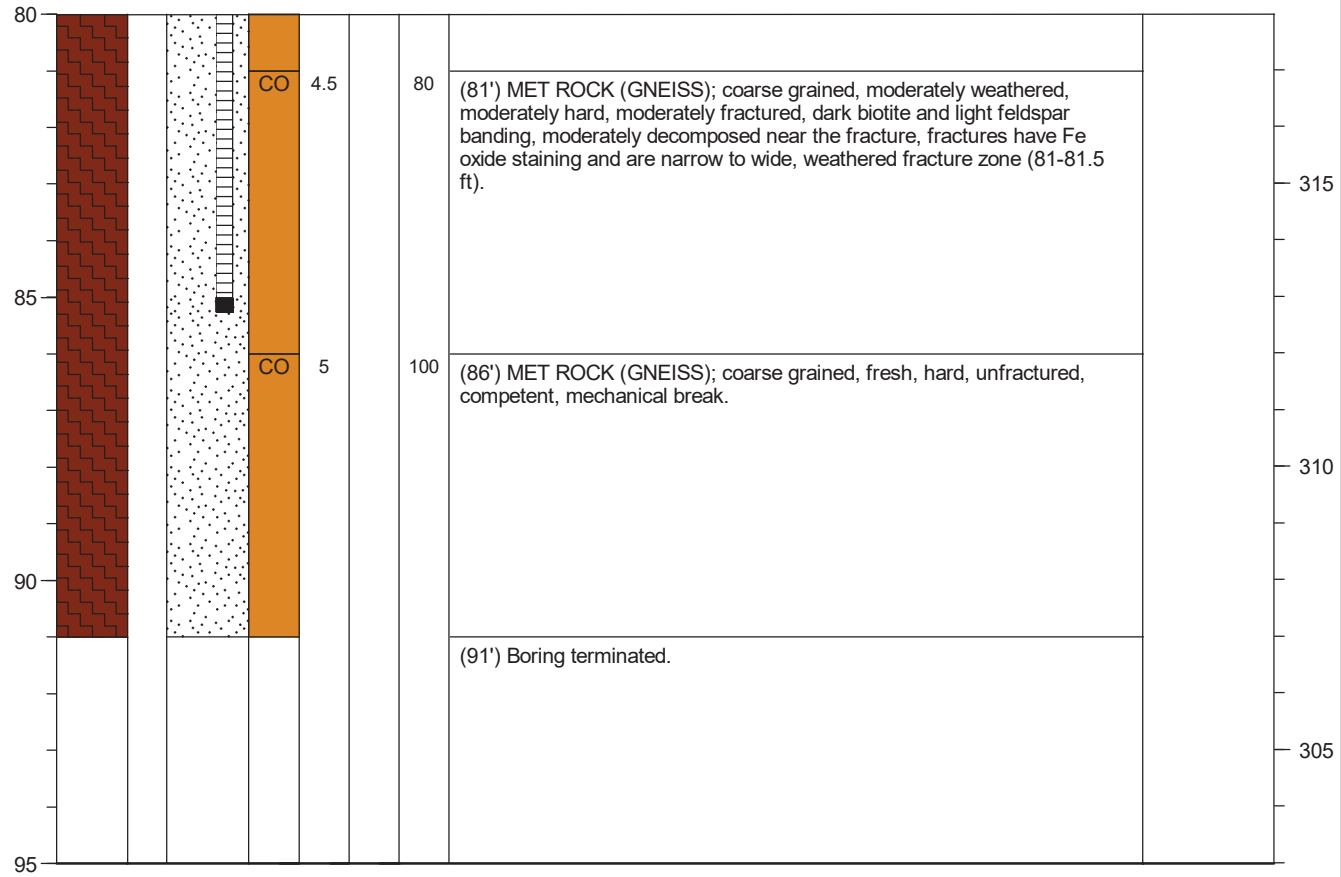
Drilling Start Date:	01/16/2019	Boring Depth (ft):	91	Well Depth (ft):	33/85
Drilling End Date:	01/17/2019	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	9.91/10.04	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	9.70/9.70	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	D-50	Top of Casing Elev. (ft):	400.91(PB-10S) 400.31(PB-10D)	Sanitary Seal:	Bentonite Pellets
Driller:	Phil Pitts	Ground Elev. (ft):	397.6(PB-10S) 397.5(PB-10D)	Filter Pack:	Sand
Logged By:	Nardos Tilahun	Location (X,Y):	1163588.9, 2558551.2(PB-10S) 1163593.4, 2558546.7(PB-10D)	Sampling Method(s):	SS/SH/CO



NOTES: PB-10S and PB-10D are stickup wells, PB-10S is ~10ft away from PB-10D well. Depth to water at PB-10S is 9.7 feet below ground surface.
NA = Not Applicable

Easting and Northing in NAD 83.
Elevation in NAVD 88.

Boring log revised with new survey data dated 7/23/2020.

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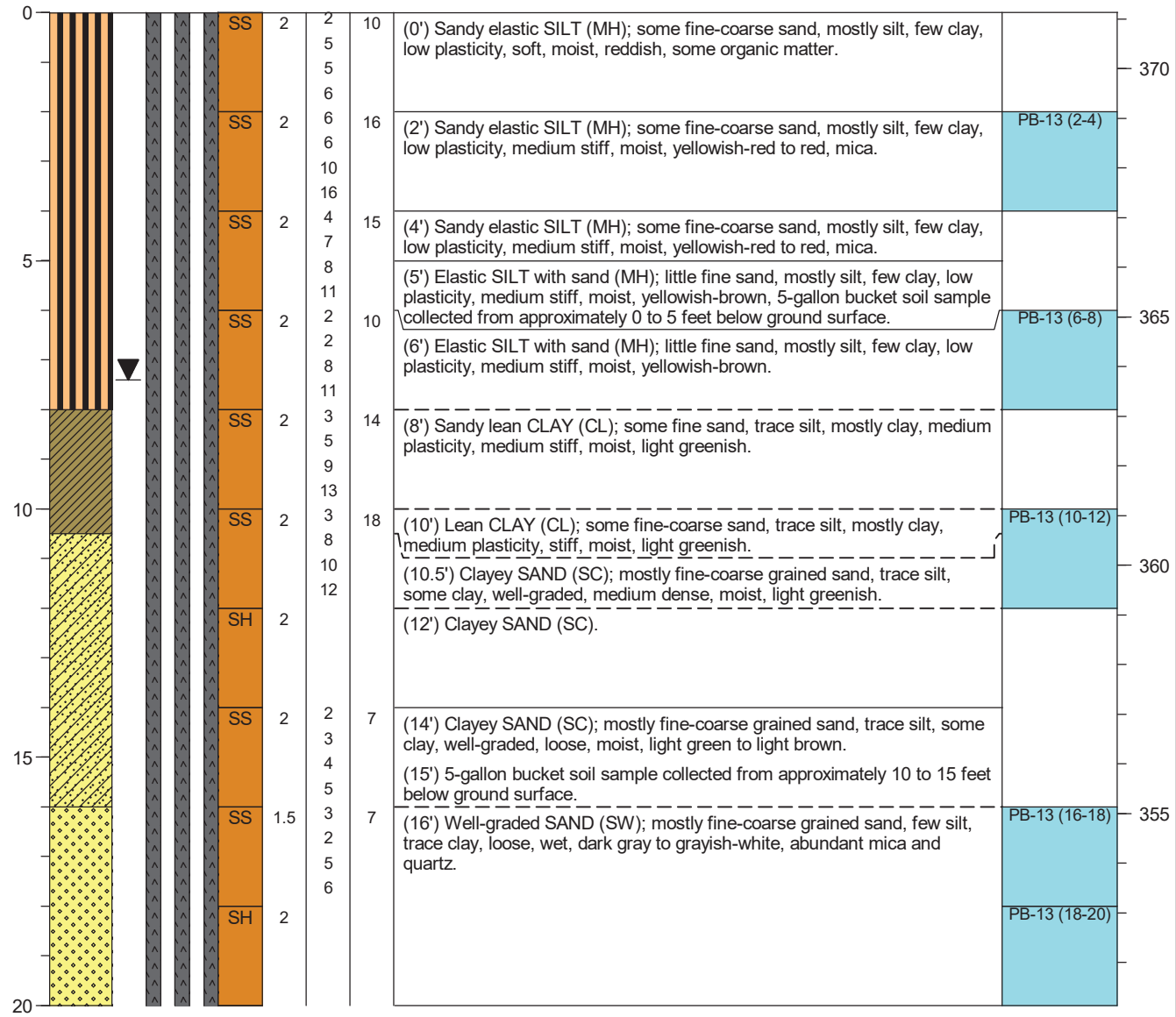
Client: Georgia Power Company
Project: Plant Branch CCR Landfill Site Investigation
Address: 1100 Milledgeville Rd, Milledgeville

WELL LOG
Well No. PB-13S/PB-13D
Page: 1 of 6

Drilling Start Date:	12/10/2018	Boring Depth (ft):	107.8	Well Depth (ft):	50/97
Drilling End Date:	12/18/2018	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	7.19/7.74	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	7.40/7.40	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	D-50	Top of Casing Elev. (ft):	373.31(PB-13S) 373.77(PB-13D)	Sanitary Seal:	Bentonite Pellets
Driller:	Phil Pitts	Ground Elev. (ft):	370.8(PB-13S) 371.1(PB-13D)	Filter Pack:	Sand
Logged By:	Nardos Tilahun	Location (X,Y):	1162084.4, 2556626.1(PB-13S) 1162084.5, 2556638.8(PB-13D)	Sampling Method(s):	SS/SH/CO



NOTES: PB-13S and PB-13D are stickup wells, PB-13S is ~10ft away from PB-13D well. Depth to water at PB-13S is 7.4 feet below ground surface.
NA = Not Applicable

Boring log revised with new survey data dated 7/23/2020.

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Project: Plant Branch CCR Landfill Site Investigation
Address: 1100 Milledgeville Rd, Milledgeville

WELL LOG
Well No. PB-13S/PB-13D
Page: 2 of 6

Drilling Start Date:	12/10/2018	Boring Depth (ft):	107.8	Well Depth (ft):	50/97
Drilling End Date:	12/18/2018	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	7.19/7.74	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	7.40/7.40	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	D-50	Top of Casing Elev. (ft):	373.31(PB-13S) 373.77(PB-13D)	Sanitary Seal:	Bentonite Pellets
Driller:	Phil Pitts	Ground Elev. (ft):	370.8(PB-13S) 371.1(PB-13D)	Filter Pack:	Sand
Logged By:	Nardos Tilahun	Location (X,Y):	1162084.4, 2556626.1(PB-13S) 1162084.5, 2556638.8(PB-13D)	Sampling Method(s):	SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT: Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: Lab Sample	ELEV. (ft msl)
20				SS	1.5	3 5 7 9	12	(20') Silty SAND (SM); mostly fine-medium grained sand, some silt, trace clay, poorly graded, medium dense, wet, light gray.		350
				SS	1.2	4 6 8 11	14	(22') Silty SAND (SM); mostly fine-medium grained sand, some silt, trace clay, poorly graded, medium dense, wet, light gray.		
				SS	0.8	4 7 9 10	16	(24') Well-graded SAND (SW); mostly fine-coarse grained sand, trace silt, trace clay, medium dense, wet, grayish-white, abundant mica, 5-gallon bucket soil sample collected from approximately 20 to 24 feet below ground surface.		
25				SS	1	5 6 9 12	15	(26') Well-graded SAND (SW); mostly fine-coarse grained sand, trace silt, trace clay, medium dense, wet, grayish-white to yellow gray.		345
				SS	0.8	2 5 7 9	12	(28') Well-graded SAND (SW); mostly fine-coarse grained sand, few silt, few clay, medium dense, wet, grayish-white to yellowish-gray, abundant mica and quartz.	PB-13 (28-30)	
30				SH	2				PB-13 (30-32)	340
				SS	0.7	9 13 15 14	28	(32') Well-graded SAND (SW); mostly fine-coarse grained sand, trace silt, trace clay, medium dense, wet, grayish-white to white, abundant mica and quartz.		
				SS	0.8	5 8 15 15	23	(34') Well-graded SAND (SW); mostly fine-coarse grained sand, trace silt, trace clay, medium dense, wet, grayish-white to white, abundant mica and quartz, laminated.		
35				SS	0.8	6 7 10 13	17	(36') Well-graded SAND (SW); mostly fine-coarse grained sand, trace silt, trace clay, medium dense, wet, grayish-white to white, abundant mica and quartz, laminated.		335
				SS	1	6 7 10 13	17	(38') Well-graded SAND (SW); mostly fine-coarse grained sand, trace silt, trace clay, medium dense, wet, grayish-white to white, abundant mica and quartz.		
40										

NOTES: PB-13S and PB-13D are stickup wells, PB-13S is ~10ft away from PB-13D well. Depth to water at PB-13S is 7.4 feet below ground surface.
NA = Not Applicable

Boring log revised with new survey data dated 7/23/2020.

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Project: Plant Branch CCR Landfill Site Investigation
Address: 1100 Milledgeville Rd, Milledgeville

WELL LOG
Well No. PB-13S/PB-13D
Page: 3 of 6

Drilling Start Date:	12/10/2018	Boring Depth (ft):	107.8	Well Depth (ft):	50/97
Drilling End Date:	12/18/2018	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	7.19/7.74	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	7.40/7.40	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	D-50	Top of Casing Elev. (ft):	373.31(PB-13S) 373.77(PB-13D)	Sanitary Seal:	Bentonite Pellets
Driller:	Phil Pitts	Ground Elev. (ft):	370.8(PB-13S) 371.1(PB-13D)	Filter Pack:	Sand
Logged By:	Nardos Tilahun	Location (X,Y):	1162084.4, 2556626.1(PB-13S) 1162084.5, 2556638.8(PB-13D)	Sampling Method(s):	SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT: Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: Lab Sample	ELEV. (ft msl)
40				SS	0.8	8 10 13 18	23	(40') Well-graded SAND (SW); mostly fine-coarse grained sand, trace silt, trace clay, medium dense, wet, grayish-white to white, abundant mica and quartz.		330
				SS	1.3	7 7 9 16	16	(42') Silty SAND (SM); mostly fine-coarse grained sand, some silt, trace clay, well-graded, medium dense, wet, green to white, abundant mica and quartz.	PB-13 (42-44)	
45				SS	1	10 17 30 41	47	(44') Silty SAND (SM); mostly fine-coarse grained sand, some silt, trace clay, well-graded, dense, wet, greenish, abundant mica and quartz.		325
				SS	0.3	5 6 16 42	22	(46') Silty SAND (SM); mostly fine-coarse grained sand, some silt, trace clay, well-graded, medium dense, wet, green to white, abundant mica and quartz, laminated.		
				SS	1.1	32 26 31 43	57	(48') Silty SAND (SM); mostly fine-coarse grained sand, some silt, trace clay, well-graded, very dense, wet, dark gray to dark brown to white, abundant mica and quartz, laminated.		
50										320
				SS	0.4	21 50/5	50	(53') Silty SAND (SM); mostly fine-coarse grained sand, some silt, trace clay, very dense, wet, grayish-white, abundant mica and quartz, laminated, black mottles. (54') Top of PWR.		
55										315
				SS	0.3	50/4		(58') Silty SAND (SM); mostly fine-coarse grained sand, some silt, trace clay, very dense, wet, grayish-white, abundant mica and quartz, laminated, black mottles.		
60										

NOTES: PB-13S and PB-13D are stickup wells, PB-13S is ~10ft away from PB-13D well. Depth to water at PB-13S is 7.4 feet below ground surface.
NA = Not Applicable

Boring log revised with new survey data dated 7/23/2020.

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Client: Georgia Power Company
Project: Plant Branch CCR Landfill Site Investigation
Address: 1100 Milledgeville Rd, Milledgeville

WELL LOG
Well No. PB-13S/PB-13D
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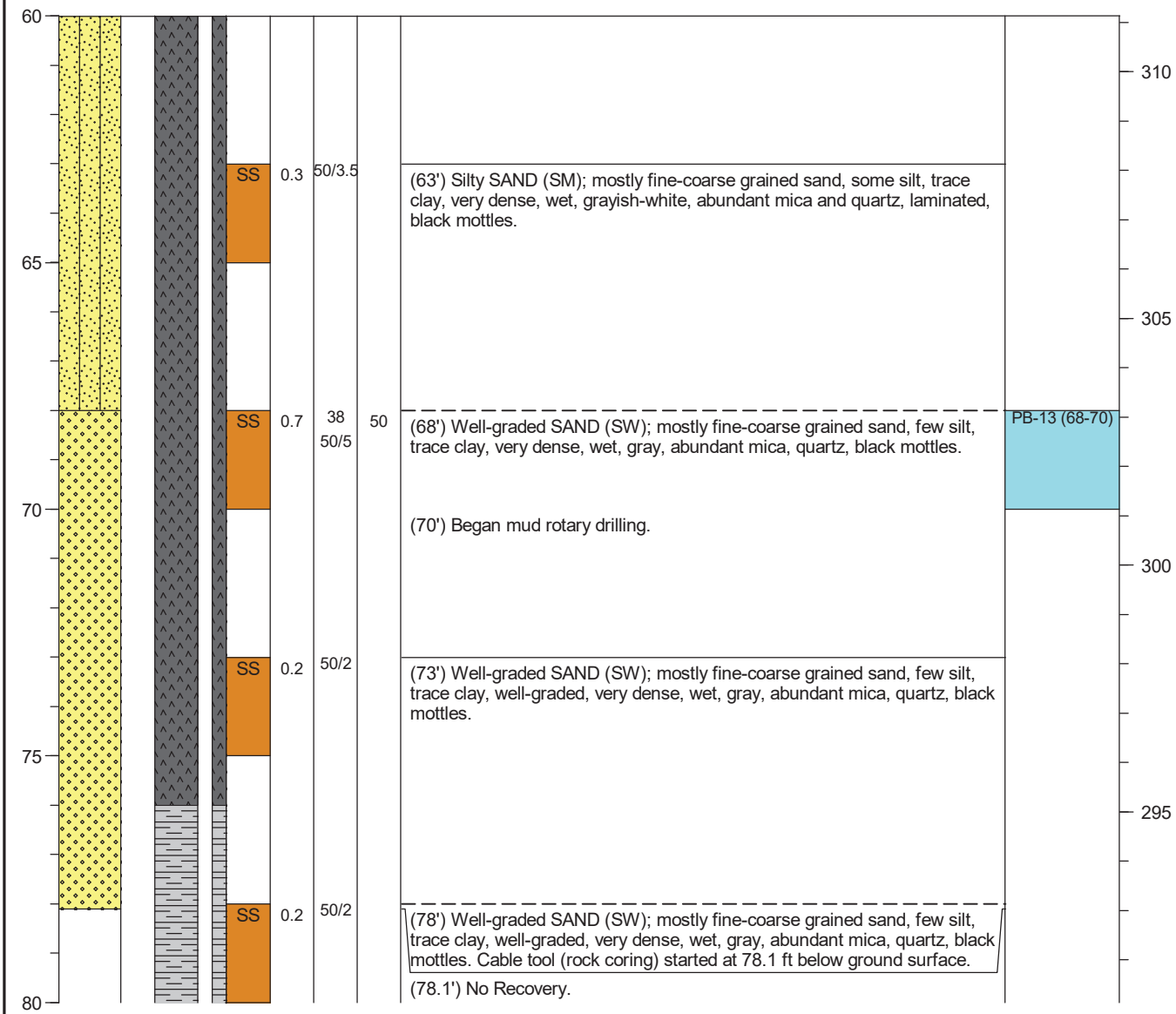
Drilling Start Date:	12/10/2018	Boring Depth (ft):	107.8	Well Depth (ft):	50/97
Drilling End Date:	12/18/2018	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	7.19/7.74	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	7.40/7.40	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	D-50	Top of Casing Elev. (ft):	373.31(PB-13S) 373.77(PB-13D)	Sanitary Seal:	Bentonite Pellets
Driller:	Phil Pitts	Ground Elev. (ft):	370.8(PB-13S) 371.1(PB-13D)	Filter Pack:	Sand
Logged By:	Nardos Tilahun	Location (X,Y):	1162084.4, 2556626.1(PB-13S) 1162084.5, 2556638.8(PB-13D)	Sampling Method(s):	SS/SH/CO



NOTES: PB-13S and PB-13D are stickup wells, PB-13S is ~10ft away from PB-13D well. Depth to water at PB-13S is 7.4 feet below ground surface.
NA = Not Applicable

Boring log revised with new survey data dated 7/23/2020.

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Project: Plant Branch CCR Landfill Site Investigation
Address: 1100 Milledgeville Rd, Milledgeville

WELL LOG
Well No. PB-13S/PB-13D
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Drilling Start Date:	12/10/2018	Boring Depth (ft):	107.8	Well Depth (ft):	50/97
Drilling End Date:	12/18/2018	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	7.19/7.74	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	7.40/7.40	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	D-50	Top of Casing Elev. (ft):	373.31(PB-13S) 373.77(PB-13D)	Sanitary Seal:	Bentonite Pellets
Driller:	Phil Pitts	Ground Elev. (ft):	370.8(PB-13S) 371.1(PB-13D)	Filter Pack:	Sand
Logged By:	Nardos Tilahun	Location (X,Y):	1162084.4, 2556626.1(PB-13S) 1162084.5, 2556638.8(PB-13D)	Sampling Method(s):	SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT: Sample Type	COLLECT: Recovery (ft)	COLLECT: Blow Counts	COLLECT: N Value RQD (%)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: Lab Sample	ELEV. (ft msl)
80										290
				CO	0			(82') No Recovery.		
85										285
				CO	3		8	(87') MET ROCK (GNEISS); coarse grained, moderately weathered, hard, intensely fractured, wet, dark biotite and white feldspar minerals, competent, iron oxidation on fracture surface, fractures not healed. Coring recovery from 78 to 87 feet below ground surface (ft bgs) was zero, top of competent rock could be at 87 ft bgs.		
90										280
				CO	2.2		0	(92') MET ROCK (GNEISS); coarse grained, moderately weathered, hard, intensely fractured, wet, dark biotite and white feldspar minerals, competent, iron oxidation on fracture surface, fractures not healed.		
95										275
				CO	5		100	(97') MET ROCK (GNEISS); coarse grained, fresh, hard, unfractured, dark biotite and white feldspar minerals, competent, strong, flow banding.		
100										

NOTES: PB-13S and PB-13D are stickup wells, PB-13S is ~10ft away from PB-13D well. Depth to water at PB-13S is 7.4 feet below ground surface.
NA = Not Applicable

Boring log revised with new survey data dated 7/23/2020.

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Client: Georgia Power Company
Project: Plant Branch CCR Landfill Site Investigation
Address: 1100 Milledgeville Rd, Milledgeville

WELL LOG
Well No. PB-13S/PB-13D
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Drilling Start Date:	12/10/2018	Boring Depth (ft):	107.8	Well Depth (ft):	50/97
Drilling End Date:	12/18/2018	Boring Diameter (in):	6.50	Well Diam. (in)/Screen Slot (in):	2.0/0.010
Drilling Company:	Thompson Engineering	Static Water Level (ft):	7.19/7.74	Riser Material:	Sch 40 PVC
Drilling Method:	Hollow Stem Auger	DTW After Drilling (ft):	7.40/7.40	Screen Material:	Sch 40 PVC Slotted
Drilling Equipment:	D-50	Top of Casing Elev. (ft):	373.31(PB-13S) 373.77(PB-13D)	Sanitary Seal:	Bentonite Pellets
Driller:	Phil Pitts	Ground Elev. (ft):	370.8(PB-13S) 371.1(PB-13D)	Filter Pack:	Sand
Logged By:	Nardos Tilahun	Location (X,Y):	1162084.4, 2556626.1(PB-13S) 1162084.5, 2556638.8(PB-13D)	Sampling Method(s):	SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT: Sample Type	COLLECT: Recovery (ft)	COLLECT: Blow Counts	COLLECT: N Value RQD (%)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: Lab Sample	ELEV. (ft msl)
100										270
				CO	5		100	(102') MET ROCK (GNEISS); coarse grained, fresh, hard, unfractured, dark biotite and white feldspar minerals, competent, strong, flow banding.		
105										265
				CO	0.8		100	(107') MET ROCK (GNEISS); coarse grained, fresh, hard, unfractured, dark biotite and white feldspar minerals, competent, strong, flow banding.		
								(107.8') Boring terminated.		
110										

NOTES: PB-13S and PB-13D are stickup wells, PB-13S is ~10ft away from PB-13D well. Depth to water at PB-13S is 7.4 feet below ground surface.
NA = Not Applicable

Easting and Northing in NAD 83.
Elevation in NAVD 88.

RECORD OF BOREHOLE PB-16

PROJECT: Plant Branch - Ash Pond Closure
PROJECT NO.: 19128646
LOCATION: Landfill Footprint

DRILLING START: September 9, 2021 13:00
DRILLING END: September 9, 2021 17:00
COORDINATES: N: 1,165,255 E: 2,556,474

SHEET: 1 of 1
GS ELEV.: 382.0
TOC ELEV.: na
DATUM: NAVD88

DEPTH (ft)	BORING METHOD	SOIL PROFILE: Depth	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	SAMPLES: BLOWS per 6 in (ASTM D1586, 140 lb hammer, 30 inch drop, Automatic)	SAMPLES: REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft (20 40 60 80)	WATER CONTENT (%) (W_p W W_l) (20 40 60 80)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0		382.0									
	Hand Auger		Hand augered from 0' to 5' for underground utility clearance.										
5		5.0		377.0									
	Mud Rotary Drilling		RESIDUUM, (SP-SM), SAND, medium to coarse, poorly graded, some non plastic fines, white with brown; non-cohesive, moist		SP-SM								
10													
15													
20							DO S-01	3-5-6 **(11)**	16 / 18	11 ■			
		24.3		357.8								▼ 23.6 ft, 09/16/2021 13:45, Water level measured at 23.6ft bgs.	
25			RESIDUUM, (SM), SILTY SAND, medium, non plastic fines, dark brown with white; non-cohesive, moist		SM								
30							DO S-02	6-9-5 **(14)**	3 / 18	14 ■			
35													
40							DO S-03	6-7-10 **(17)**	13 / 18	17 ■			
45		45.0		337.0									
			Bottom of borehole at 45.0 ft. Borehole terminated at 45ft bgs.										
50													

DRILLING CO.: Mid-Atlantic Drilling
DRILLER: Brandon Powell
DRILL RIG: CME45C

LOGGED: Omar Eid
CHECKED: Qian Zhao
REVIEWED: Andrew Fuggle

GOLDER
MEMBER OF WSP

PB-16
1 of 1

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 9/30/21 22:19
\\GOLDERASSOCIATES.SHAREPOINT.COM@SSL\DAV\WWWROOT\SITES\113824\PROJECT FILES\5 TECHNICAL WORK\300_FIELD INFORMATION\GINT\PLANTBRANCH.GPJ

RECORD OF BOREHOLE PB-17

PROJECT: Plant Branch - Ash Pond Closure
PROJECT NO.: 19128646
LOCATION: Landfill Footprint

DRILLING START: September 9, 2021 17:45
DRILLING END: September 10, 2021 09:00
COORDINATES: N: 1,164,793 E: 2,555,640

SHEET: 1 of 1
GS ELEV.: 402.0
TOC ELEV.: na
DATUM: NAVD88

DEPTH (ft)	BORING METHOD	SOIL PROFILE: Depth	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	SAMPLES: BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	SAMPLES: REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft (20 40 60 80) / WATER CONTENT (%) (W_p W W_l) (20 40 60 80)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0		402.0								
	Hand Auger		Hand augered from 0' to 5' for underground utility clearance.									
5		5.0		397.0								
	Mud Rotary Drilling		RESIDUUM, (SC), CLAYEY SAND, fine to medium, low plasticity fines, gray to dark brown; cohesive, firm, w < PL									
10												
15												
20					SC		DO S-01	2-4-4 **(8)**	16/18	8		
25											▼ 23.4 ft, 09/16/2021 13:45, Water level measured at 23.4ft bgs.	
30							DO S-02	4-3-4 **(7)**	13/18	7		
35		34.3		367.8								
			RESIDUUM, (CL), SILTY CLAY, medium plasticity, some medium sand, brown banded white; cohesive, firm, w < PL to w ~ PL									
40					CL		DO S-03	1-2-3 **(5)**	18/18	5		
45		45.0		357.0								
			Bottom of borehole at 45.0 ft. Borehole terminated at 45ft bgs.									
50												

DRILLING CO.: Mid-Atlantic Drilling
DRILLER: Brandon Powell
DRILL RIG: CME45C

LOGGED: Omar Eid
CHECKED: Qian Zhao
REVIEWED: Andrew Fuggle

GOLDER
MEMBER OF WSP

PB-17
1 of 1

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 9/30/21 22:19
\\GOLDERASSOCIATES.SHAREPOINT.COM@SSL\DAV\WWWROOT\SITES\113824\PROJECT FILES\5 TECHNICAL WORK\300_FIELD INFORMATION\GINT\PLANTBRANCH.GPJ

RECORD OF BOREHOLE PB-18

PROJECT: Plant Branch - Ash Pond Closure
PROJECT NO.: 19128646
LOCATION: Landfill Footprint

DRILLING START: September 10, 2021 12:25
DRILLING END: September 10, 2021 14:50
COORDINATES: N: 1,164,632 E: 2,555,907

SHEET: 1 of 1
GS ELEV.: 402.0
TOC ELEV.: na
DATUM: NAVD88

DEPTH (ft)	BORING METHOD	SOIL PROFILE: Depth	DESCRIPTION	SOIL PROFILE: Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	SAMPLES: BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	SAMPLES: REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft; WATER CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0		402.0								
	Hand Auger		Hand augered from 0' to 5' for underground utility clearance.									
5		5.0		397.0								
	Mud Rotary Drilling		RESIDUUM, (SP), SAND, medium to coarse, poorly graded, some fine gravel, brown with white; non-cohesive, loose to dense, moist									
10												
15											▼ 15.5 ft, 09/16/2021 13:45, Water level measured at 15.5ft bgs.	
20					SP		DO S-01	2-3-3 **(6)**	18/18	6		
25												
30							DO S-02	15-17-23 **(40)**	18/18	40		
35		34.3		367.8								
			PARTIALLY WEATHERED ROCK, SAMPLED AS, (SP-SM), SAND, medium to coarse, poorly graded, some non plastic fines, white and black; non-cohesive, very dense to dense, moist		SP-SM							
40		39.7		362.3			DO S-03	40-50/2" **(50/2")**	8/8	100		
			Bottom of borehole at 39.7 ft. Borehole terminated at 45ft bgs.									
45												
50												

DRILLING CO.: Mid-Atlantic Drilling
DRILLER: Brandon Powell
DRILL RIG: CME45C

LOGGED: Omar Eid
CHECKED: Qian Zhao
REVIEWED: Andrew Fuggle

GOLDER
MEMBER OF WSP

PB-18
1 of 1

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 9/30/21 22:19
\\GOLDERASSOCIATES.SHAREPOINT.COM@SSL\DAV\WWROOT\SITES\113824\PROJECT FILES\5 TECHNICAL WORK\300_FIELD INFORMATION\GINT\PLANTBRANCH.GPJ

RECORD OF BOREHOLE PB-19

PROJECT: Plant Branch - Ash Pond Closure
PROJECT NO.: 19128646
LOCATION: Landfill Footprint

DRILLING START: September 10, 2021 09:30
DRILLING END: September 10, 2021 12:00
COORDINATES: N: 1,165,100 E: 2,555,726

SHEET: 1 of 1
GS ELEV.: 387.0
TOC ELEV.: na
DATUM: NAVD88

DEPTH (ft)	BORING METHOD	SOIL PROFILE: Depth	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	SAMPLES: BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	SAMPLES: REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0		387.0						20 40 60 80		
										WATER CONTENT (%) W_p W W_l 20 40 60 80		
	Hand Auger		Hand augered from 0' to 5' for underground utility clearance.									
5		5.0		382.0							▼ 3.8 ft, 09/16/2021 13:45, Water level measured at 3.8ft bgs.	
	Mud Rotary Drilling		RESIDUUM, (SC), CLAYEY SAND, fine to coarse, low plasticity fines, trace fine gravel, brown; cohesive, firm, w > PL		SC							
10												
15												
20							DO S-01	2-4-3 **(7)**	18/18	7 ■		
25												
30		29.3		357.8								
			RESIDUUM, (SM), SILTY SAND, medium to coarse, non plastic fines, light gray to brown; non-cohesive, dense, wet		SM							
35												
40							DO S-02	6-15-17 **(32)**	18/18	32 ■		
		43.8		343.2								
45			Bottom of borehole at 43.8 ft. Borehole terminated at 45ft bgs.									
50												

DRILLING CO.: Mid-Atlantic Drilling
DRILLER: Brandon Powell
DRILL RIG: CME45C

LOGGED: Omar Eid
CHECKED: Qian Zhao
REVIEWED: Andrew Fuggle

GOLDER
MEMBER OF WSP

PB-19
1 of 1

01 - GOLDER - BOREHOLE RECORD - DF STD US LAB E-M.GDT - 9/30/21 22:19
\\GOLDERASSOCIATES.SHAREPOINT.COM@SSL\DAV\WWWROOT\SITES\113824\PROJECT FILES\5 TECHNICAL WORK\300_FIELD INFORMATION\GINT\PLANTBRANCH.GPJ

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Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG

Well No. BRLFC-01
Page: 1 of 1

Drilling Start Date:	**08/30/2022**	Boring Depth (ft):	**35**	Well Depth (ft TOC):	**35.47**
Drilling End Date:	**08/30/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**--**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**C-200**	Ground Surface Elevation:	**378.49 NAV88**	Screen Material:	**Sch 40 PVC Pre-Pack**
Driller:	**V. Scott**	Top of Casing Elevation:	**381.35 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**C. Cain**	North, East (Y,X):	**1162232.42, 2557158.88**	Filter Pack:	**20/40 Sand**

DEPTH (ft)	Sample Type	Recovery (%)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
0	GR		(0') SANDY CLAY (CL); reddish-brown, dry, medium stiff, nonplastic (saprolite).	Hand augered 0-10 feet bgs.	
				Filter Pack: ~2.5 ft^3	
				Bentonite: ~0.35 ft^3	
5				Grout: ~2.8 ft^3	375
					370
10	CB	100	(10') PARTIALLY WEATHERED ROCK (PWR); gray with some reddish-brown mottling of clay, low plasticity, highly weathered rock structure.		
			(13.5') PWR; brown, dry, low plasticity, micaceous with clay, highly weathered.		365
15	CB	100	(14') PWR; light gray and tan, dry, low plasticity, clay, highly weathered.		
			(15') PWR; grayish brown, moist, medium to low plasticity, fine sand, weathered rock.		
			(16') PWR; grayish brown, dry, low plasticity, fine to medium sand, some structure, highly weathered.		360
20	CB	100	(18.5') PWR; dry, nonplastic, fine to medium sand, relict rock structure, weathered.	Driller has return water while running 6 inch outer casing	
			(19') PWR; grayish brown, dry, low plasticity, fine to medium sand, highly weathered.		
			(20') PWR; moist, low plasticity, fine to medium sand.		355
25	CB	0	(21.5') PWR; light gray, dry, stiff, medium sand with some fine sand and tan brown layering, weathered rock structure.	Driller ran outer casing to 30 feet bgs, no recovery 25 to 30 feet bgs	
			(25') No recovery.		350
30	CB	100	(30') PWR; gray, moist, stiff, low plasticity, fine to medium sand, weathered.		
			(32') GNEISS; weathered, trace staining.	Increase drill chatter; driller advances with water	
			(33') GNEISS; few quartz veins and biotite rich, little to no staining.		345
35			(35') Boring terminated.		

NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+2.86 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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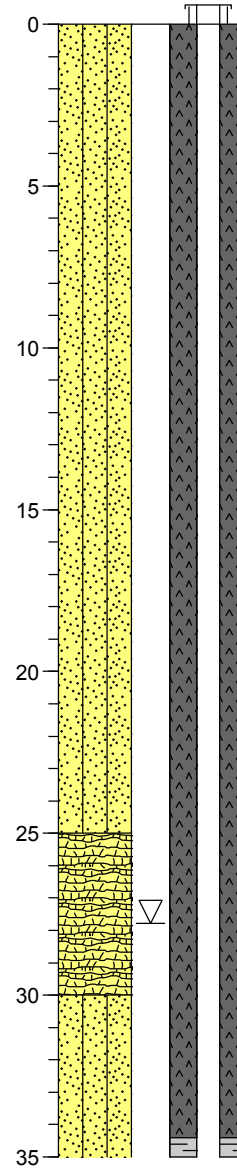
Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-02
Page: 1 of 2

Drilling Start Date:	**08/24/2022**	Boring Depth (ft):	**55**	Well Depth (ft TOC):	**54.12**
Drilling End Date:	**08/24/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**27.8**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**381.63 NAV88**	Screen Material:	**Sch 40 PVC Slotted**
Driller:	**C. Franklin**	Top of Casing Elevation:	**384.13 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**M. Cange**	North, East (Y,X):	**1161957.83, 2556825.52**	Filter Pack:	**20/40 Sand**



DEPTH (ft)	Sample Type	Recovery (%)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
0	GR		(0') SILTY SAND (SM); reddish-brown to brown, dry, loose, low plasticity, minor weathered rock fragments (saprolite).	Hand augered 0-10 feet bgs. Filter Pack: ~2.0 ft^3 Bentonite: ~0.76 ft^3 Grout: ~5.7 ft^3	380
10	CB	100	(10') SILTY SAND (SM); brown to yellow-brown, dry, loose, low plasticity, micaceous with some weathered rock fragments (saprolite). (16') Becomes moist.		370
20	CB	90	(20') Same as above.		360
25	CB	90	(25') SAPROLITE; gray to white, moist, loose, low plasticity, micaceous with some weathered rock fragments. (29') Becomes white, with angular quartz fragments.		355
30	CB	90	(30') SILTY SAND (SM); gray, wet, loose, low plasticity, micaceous (saprolite). (33') Becomes moist, with weathered rock fragments.		350
35					

NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+2.51 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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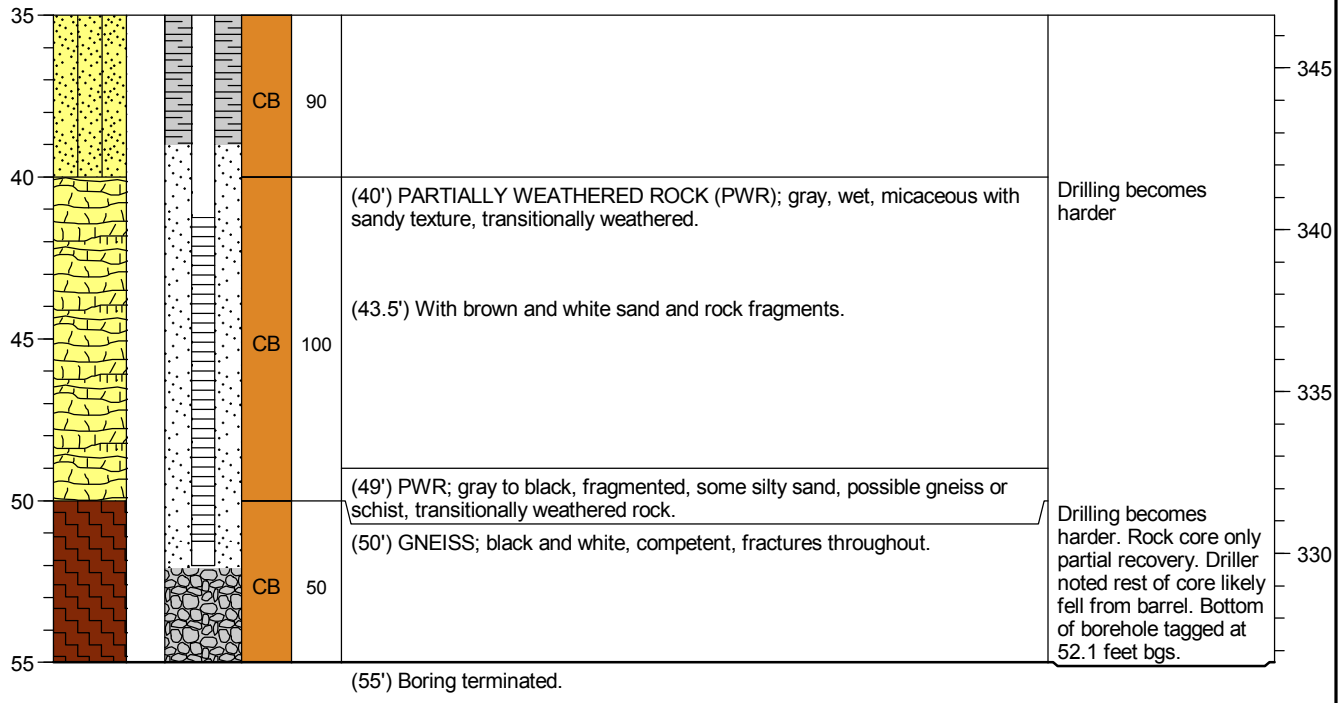
Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-02
Page: 2 of 2

Drilling Start Date:	**08/24/2022**	Boring Depth (ft):	**55**	Well Depth (ft TOC):	**54.12**
Drilling End Date:	**08/24/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**27.8**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**381.63 NAV88**	Screen Material:	**Sch 40 PVC Slotted**
Driller:	**C. Franklin**	Top of Casing Elevation:	**384.13 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**M. Cange**	North, East (Y,X):	**1161957.83, 2556825.52**	Filter Pack:	**20/40 Sand**



NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+2.51 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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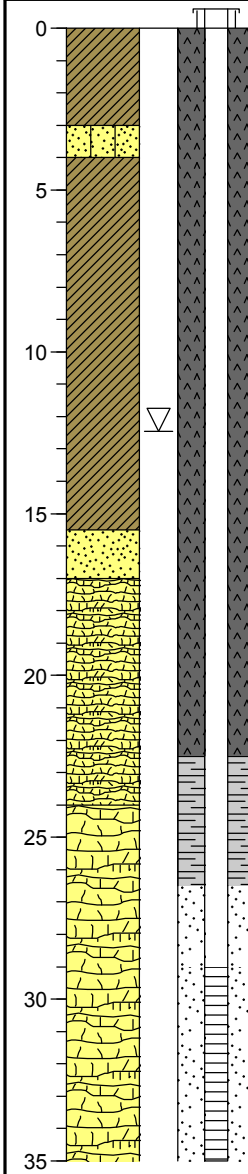
Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-03
Page: 1 of 2

Drilling Start Date:	**08/23/2022**	Boring Depth (ft):	**40**	Well Depth (ft TOC):	**41.89**
Drilling End Date:	**08/23/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**12.5**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**366.38 NAV88**	Screen Material:	**Sch 40 PVC Slotted**
Driller:	**C. Franklin**	Top of Casing Elevation:	**369.42 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**D. Kegley/M. Cange**	North, East (Y,X):	**1162377.23, 2556336.55**	Filter Pack:	**20/40 Sand**



DEPTH (ft)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
0	(0') CLAY (CL); reddish-brown, dry, soft to medium stiff, low plasticity, some silt (saprolite).	Hand augered 0-10 feet bgs.	365
3	(3') SILTY SAND (SM); brown to gray, dry, loose, low plasticity, some rock fragments (saprolite).	Filter Pack: ~2.0 ft^3 Bentonite: ~0.66 ft^3 Grout: ~3.7 ft^3	
4	(4') CLAY (CL); red, dry, medium stiff, low plasticity (saprolite).		360
10	(10') Medium stiff to stiff.		355
12	(12') SANDY CLAY (CL); gray, dry, medium stiff to stiff, low plasticity (saprolite).		
13	(13') Increasing sand content.		
14	(14') Moist.		
15.5	(15.5') SAND (SP); dark gray to black, wet, loose (saprolite).		350
17	(17') SAPROLITE; gray to yellow-brown, wet, loose, micaceous with some rock fragments.		
19	(19') SAPROLITE; reddish-brown, wet to moist, loose, micaceous with some rock fragments.		
20	(20') Brown to gray, soft to medium stiff.		345
24	(24') PARTIALLY WEATHERED ROCK (PWR); gray, dry to moist, rock fragments (gneiss) throughout, transitionally weathered.		
28	(28') Gray to black.		340
30	(30') Same as above.		
31	(31') Brown to gray.	Drilling becomes harder	335

NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+3.05 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-03
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Drilling Start Date:	**08/23/2022**	Boring Depth (ft):	**40**	Well Depth (ft TOC):	**41.89**
Drilling End Date:	**08/23/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**12.5**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**366.38 NAV88**	Screen Material:	**Sch 40 PVC Slotted**
Driller:	**C. Franklin**	Top of Casing Elevation:	**369.42 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**D. Kegley/M. Cange**	North, East (Y,X):	**1162377.23, 2556336.55**	Filter Pack:	**20/40 Sand**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	Sample Type	Recovery (%)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
35								
				CB	95	(36') White to gray.		330
40								

(40') Boring terminated.

NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+3.05 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-04
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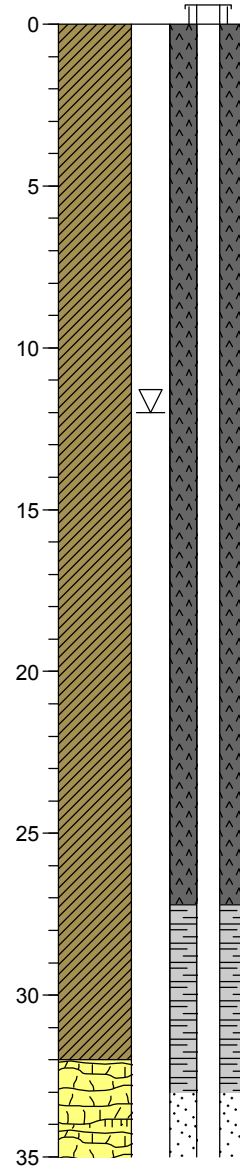
Drilling Start Date:	**08/22/2022**	Boring Depth (ft):	**47.1**	Well Depth (ft TOC):	**50.22**
Drilling End Date:	**08/23/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**12**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**385.43 NAV88**	Screen Material:	**Sch 40 PVC Slotted**
Driller:	**C. Franklin**	Top of Casing Elevation:	**388.42 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**D. Kegley**	North, East (Y,X):	**1163049.1, 2556365.01**	Filter Pack:	**20/40 Sand**



DEPTH (ft)	Sample Type	Recovery (%)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
0	GR		(0') CLAY (CL); reddish-brown, dry, medium stiff, low plasticity, trace sand (saprolite).	Hand augered 0-10 feet bgs.	385
				Filter Pack: ~2.5 ft^3	
				Bentonite: ~0.96 ft^3	
5				Grout: ~4.5 ft^3	380
			(7') SANDY CLAY (CL); brownish gray, dry, stiff, low plasticity (saprolite).		
10	CB	100	(10') SANDY CLAY (CL); reddish-brown, damp, medium stiff, medium plasticity, trace relict rock structure (saprolite).		375
15			(15') SANDY CLAY (CL); wet, fine to coarse sandy texture with some clay, micaceous, abundant relict rock structure (saprolite).		370
20	CB	90	(20') Increased relict rock structure.		365
25					360
30	CB	100	(30') Same as above.	Drilling becomes harder	355
			(32') PARTIALLY WEATHERED ROCK (PWR); brownish-black, damp, silty sand with clayey texture and some rock fragments, transitionally weathered.		
35			(34') PWR; light brown, silty sand texture with trace rock fragments and		

NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+2.99 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-04
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Drilling Start Date:	**08/22/2022**	Boring Depth (ft):	**47.1**	Well Depth (ft TOC):	**50.22**
Drilling End Date:	**08/23/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**12**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**385.43 NAV88**	Screen Material:	**Sch 40 PVC Slotted**
Driller:	**C. Franklin**	Top of Casing Elevation:	**388.42 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**D. Kegley**	North, East (Y,X):	**1163049.1, 2556365.01**	Filter Pack:	**20/40 Sand**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	Sample Type	Recovery (%)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
35				CB	100	trace clay, some relict rock structure, transitionally weathered.		350
40				CB	92	(40') Same as above.		345
45						(46.5') ROCK; some rock fragments (gneiss), transitionally weathered. (47.1') Boring terminated.		340

NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+2.99 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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Client: Southern Company Services
Project: Plant Branch Well Install
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WELL LOG
Well No. BRLFC-05
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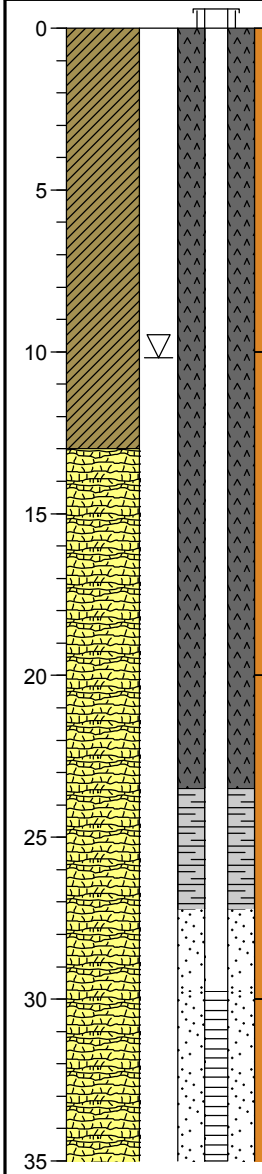
Drilling Start Date:	**08/22/2022**	Boring Depth (ft):	**40.8**	Well Depth (ft TOC):	**43.35**
Drilling End Date:	**08/22/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**10.2**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**380.81 NAV88**	Screen Material:	**Sch 40 PVC Slotted**
Driller:	**C. Franklin**	Top of Casing Elevation:	**383.62 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**D. Kegley**	North, East (Y,X):	**1163451.18, 2556075.02**	Filter Pack:	**20/40 Sand**



DEPTH (ft)	Sample Type	Recovery (%)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
0	GR		(0') CLAY (CL); reddish-brown, dry, medium stiff, low plasticity, trace sand and trace relict rock structure (saprolite).	Hand augered 0-10 feet bgs.	380
5				Filter Pack: ~2.0 ft^3 Bentonite: ~0.61 ft^3 Grout: ~3.9 ft^3	375
			(7') SANDY CLAY (CL); brownish gray, damp, stiff, low-medium plasticity, some gravel (saprolite).		
10			(10') Same as above.		370
	CB	80	(13') SAPROLITE; reddish-brown, wet, soft, medium plasticity, some relict rock structure, trace rock fragments.		
15					365
20	CB	100	(20') SAPROLITE; reddish-brown, saturated, soft, medium plasticity, trace relict rock structure.		360
25					355
30	CB	92	(30') Same as above.		350
35					

NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+2.82 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-05
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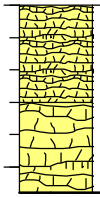
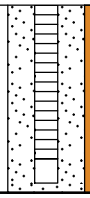
Drilling Start Date:	**08/22/2022**	Boring Depth (ft):	**40.8**	Well Depth (ft TOC):	**43.35**
Drilling End Date:	**08/22/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**10.2**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**380.81 NAV88**	Screen Material:	**Sch 40 PVC Slotted**
Driller:	**C. Franklin**	Top of Casing Elevation:	**383.62 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**D. Kegley**	North, East (Y,X):	**1163451.18, 2556075.02**	Filter Pack:	**20/40 Sand**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	Sample Type	Recovery (%)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
35				CB	92			345
40						(38') PARTIALLY WEATHERED ROCK (PWR); reddish-brown, wet, sandy clay texture with some rock fragments and relict rock structure, transitionally weathered.		

(40.8') Boring terminated.

NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+2.82 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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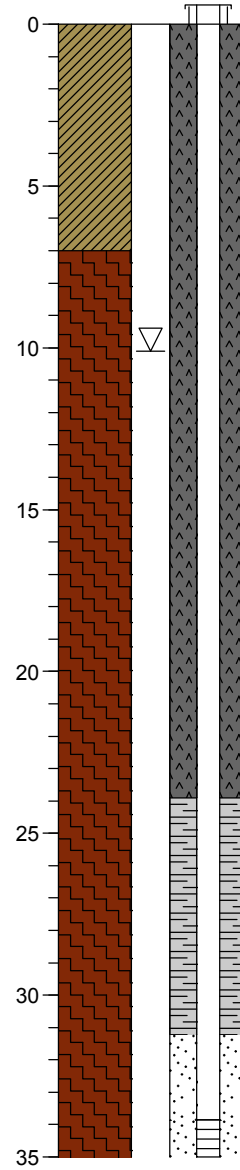
Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-06
Page: 1 of 2

Drilling Start Date:	**08/20/2022**	Boring Depth (ft):	**50**	Well Depth (ft TOC):	**47.09**
Drilling End Date:	**08/21/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**10.1**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**391.96 NAV88**	Screen Material:	**Sch 40 PVC Slotted**
Driller:	**C. Franklin**	Top of Casing Elevation:	**397.85 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**D. Kegley**	North, East (Y,X):	**1163851.24, 2555822.51**	Filter Pack:	**20/40 Sand**



DEPTH (ft)	Sample Type	Recovery (%)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
0	GR		(0') SANDY CLAY (CL); reddish-brown, dry, stiff, low plasticity, some rock fragments with trace relict rock structure (saprolite).	Hand augered 0-7 feet bgs. Rock encountered. Begin drilling. Filter Pack: ~2.0 ft^3 Bentonite: ~0.44 ft^3 Grout: ~4.0 ft^3	390
5					
7	CB	>82	(7') AMPHIBOLITE; competent rock with fractures at 8 and 9.3 feet bgs.		385
10					
10	CB	30	(10') AMPHIBOLITE; competent rock.	Driller indicated multiple softer zones in 10-20 foot run	380
15					
19			(19') Multiple fractures with iron oxide staining from 19-20 feet bgs.		375
20	CB	40	(20') AMPHIBOLITE; coarse sand texture, competent rock with transitionally weathered rock, multiple fractures throughout with minimal iron oxide staining.	Driller indicated multiple softer zones in 20-30 foot run	370
25					
30	CB	90	(30') AMPHIBOLITE; competent rock with fractures at 32.2, 34.2, 35.8, 37.2, 38.3, and 39.2 feet bgs with some iron oxide staining.		360
35					

NOTES: Boring cleared with hand auger from 0-7 feet bgs. Well (+5.9 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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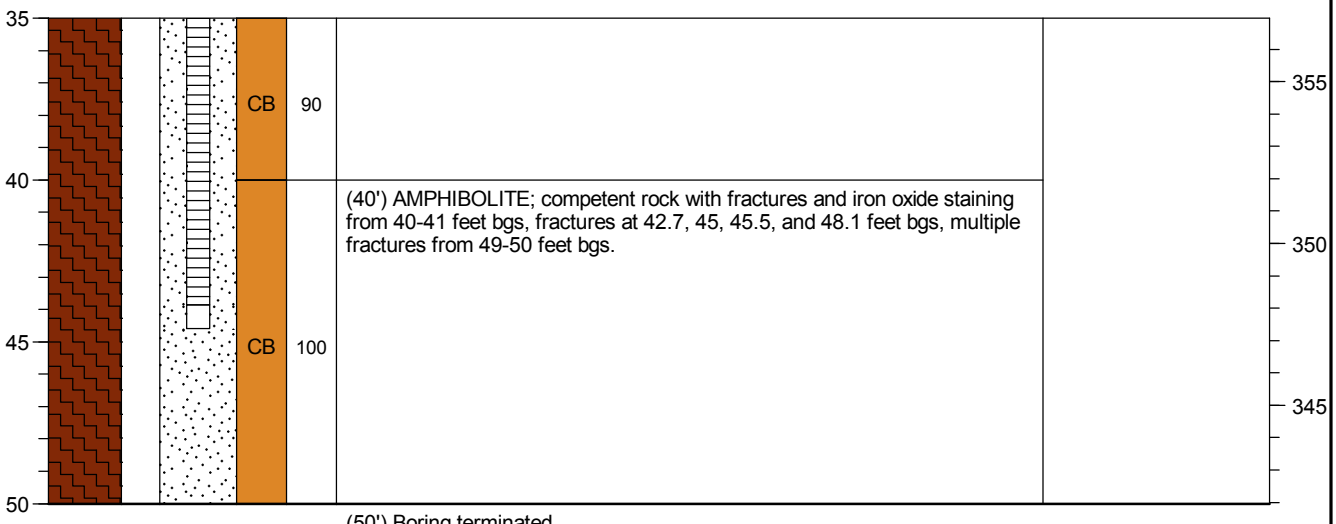
Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-06
Page: 2 of 2

Drilling Start Date:	**08/20/2022**	Boring Depth (ft):	**50**	Well Depth (ft TOC):	**47.09**
Drilling End Date:	**08/21/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**10.1**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**391.96 NAV88**	Screen Material:	**Sch 40 PVC Slotted**
Driller:	**C. Franklin**	Top of Casing Elevation:	**397.85 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**D. Kegley**	North, East (Y,X):	**1163851.24, 2555822.51**	Filter Pack:	**20/40 Sand**



DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	Sample Type	Recovery (%)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
35				CB	90			355
40				CB	100	(40') AMPHIBOLITE; competent rock with fractures and iron oxide staining from 40-41 feet bgs, fractures at 42.7, 45, 45.5, and 48.1 feet bgs, multiple fractures from 49-50 feet bgs.		350
45								345
50						(50') Boring terminated.		

NOTES: Boring cleared with hand auger from 0-7 feet bgs. Well (+5.9 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-07
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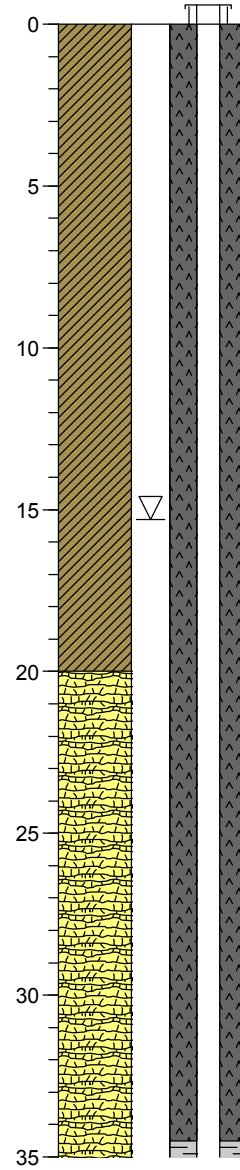
Drilling Start Date:	**08/17/2022**	Boring Depth (ft):	**54**	Well Depth (ft TOC):	**54.25**
Drilling End Date:	**08/18/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**15.3**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**407.00 NAV88**	Screen Material:	**Sch 40 PVC Slotted**
Driller:	**C. Franklin**	Top of Casing Elevation:	**409.69 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**D. Kegley**	North, East (Y,X):	**1164341.77, 2555739.63**	Filter Pack:	**20/40 Sand**



DEPTH (ft)	Sample Type	Recovery (%)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
0	GR		(0') CLAY (CL); reddish-brown, dry, medium stiff, low to medium plasticity, trace sand and trace gravel (saprolite).	Hand augered 0-10 feet bgs. Filter Pack: ~2.3 ft^3 Bentonite: ~0.5 ft^3 Grout: ~5.7 ft^3	405
10	CB	80	(10') Same as above.		395
15			(15.5') CLAY (CL); reddish-brown, damp, soft, medium plasticity, trace sand (saprolite).		390
20	CB	100	(20') SAPROLITE; reddish-brown, moist, soft, medium plasticity, some relict rock structure.		385
30	CB	95	(30') SAPROLITE; reddish-brown, wet, soft, medium plasticity, trace sand and increased relict rock structure.		375
35					

NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+2.7 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-07
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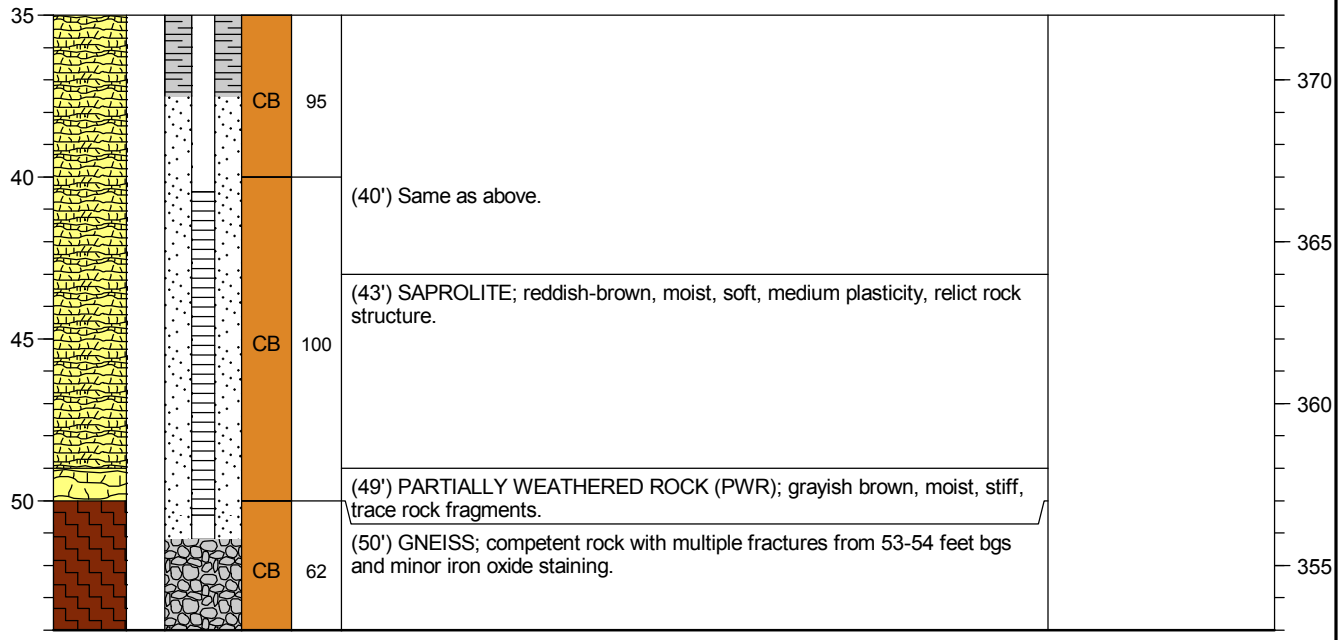
Drilling Start Date:	**08/17/2022**	Boring Depth (ft):	**54**	Well Depth (ft TOC):	**54.25**
Drilling End Date:	**08/18/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**15.3**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**407.00 NAV88**	Screen Material:	**Sch 40 PVC Slotted**
Driller:	**C. Franklin**	Top of Casing Elevation:	**409.69 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**D. Kegley**	North, East (Y,X):	**1164341.77, 2555739.63**	Filter Pack:	**20/40 Sand**



DEPTH (ft)	Sample Type	Recovery (%)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
40	CB	95	(40') Same as above.		370
45	CB	100	(43') SAPROLITE; reddish-brown, moist, soft, medium plasticity, relict rock structure.		365
50	CB	62	(49') PARTIALLY WEATHERED ROCK (PWR); grayish brown, moist, stiff, trace rock fragments. (50') GNEISS; competent rock with multiple fractures from 53-54 feet bgs and minor iron oxide staining.		360 / 355
			(54') Boring terminated.		

NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+2.7 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-08
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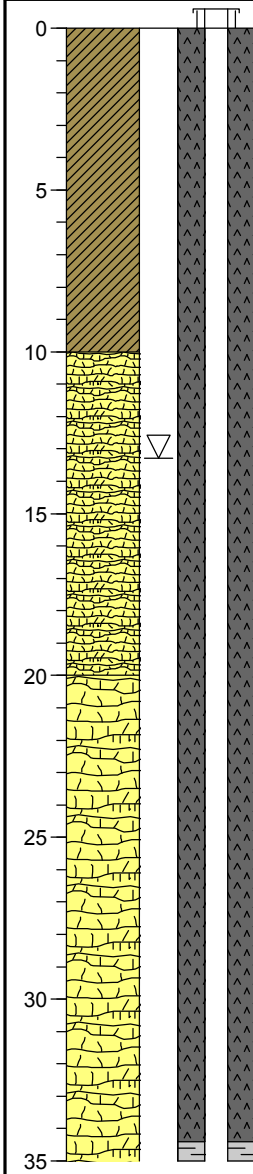
Drilling Start Date:	**08/18/2022**	Boring Depth (ft):	**54**	Well Depth (ft TOC):	**56.55**
Drilling End Date:	**08/20/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**13.3**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**397.72 NAV88**	Screen Material:	**Sch 40 PVC Slotted**
Driller:	**C. Franklin**	Top of Casing Elevation:	**400.44 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**D. Kegley**	North, East (Y,X):	**1164864.46, 2555903.7**	Filter Pack:	**20/40 Sand**



DEPTH (ft)	Sample Type	Recovery (%)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
0	GR		(0') SANDY CLAY (CL); reddish-brown, dry, medium stiff, low plasticity, trace gravel and trace relict rock structure (saprolite).	Hand augered 0-10 feet bgs.	395
5				Filter Pack: ~2.0 ft^3 Bentonite: ~0.93 ft^3 Grout: ~5.7 ft^3	
10	CB	100	(10') SAPROLITE; reddish-brown, medium stiff, low plasticity, some rock fragments with increased relict rock structure.		390
15			(16') Becomes damp.		385
20	CB	100	(19.5') SAPROLITE; brownish gray, moist, loose, some clay with trace gravel. (20') PARTIALLY WEATHERED ROCK (PWR); grayish brown, moist, silty sand texture with trace clay, some rock fragments, relict rock structure, transitionally weathered.		380
25					375
30	CB	100	(30') PWR; grayish brown, moist, fine to coarse sandy texture with trace fines (silt/clay), some rock fragments, transitionally weathered.		370
35	CB	17	(34') Sand becomes coarse.		365

NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+2.72 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-08
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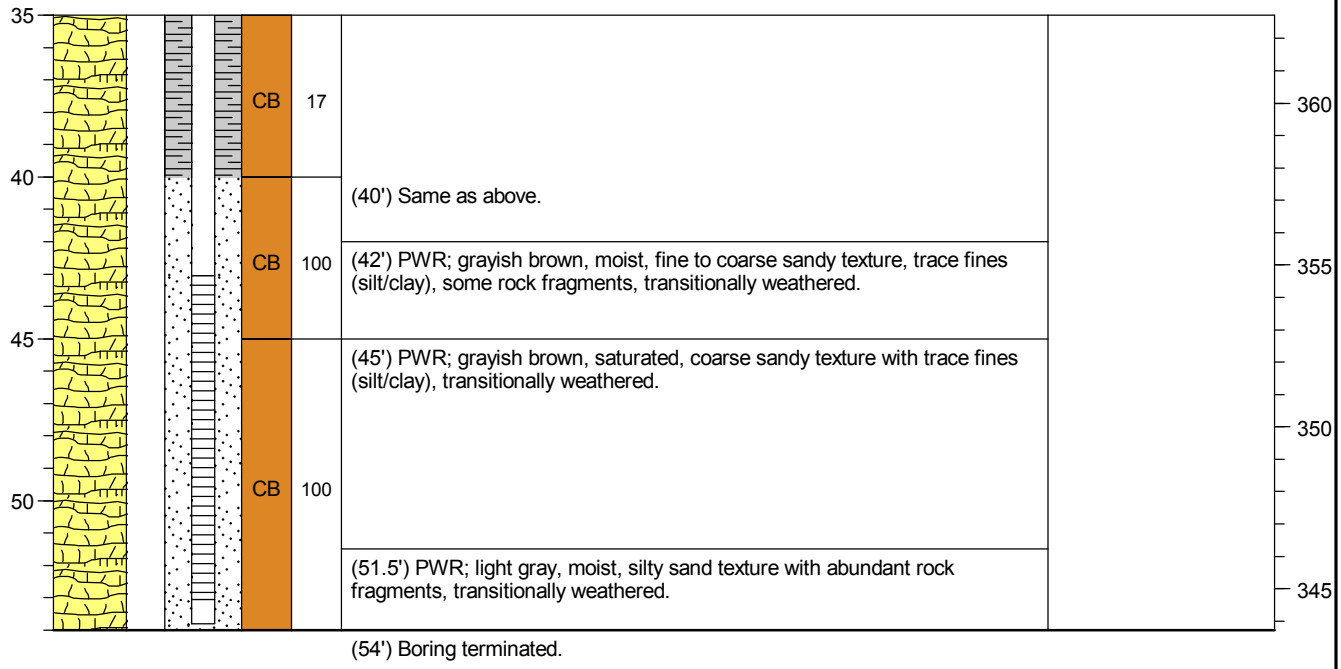
Drilling Start Date:	**08/18/2022**	Boring Depth (ft):	**54**	Well Depth (ft TOC):	**56.55**
Drilling End Date:	**08/20/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**13.3**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**397.72 NAV88**	Screen Material:	**Sch 40 PVC Slotted**
Driller:	**C. Franklin**	Top of Casing Elevation:	**400.44 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**D. Kegley**	North, East (Y,X):	**1164864.46, 2555903.7**	Filter Pack:	**20/40 Sand**



NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+2.72 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-09
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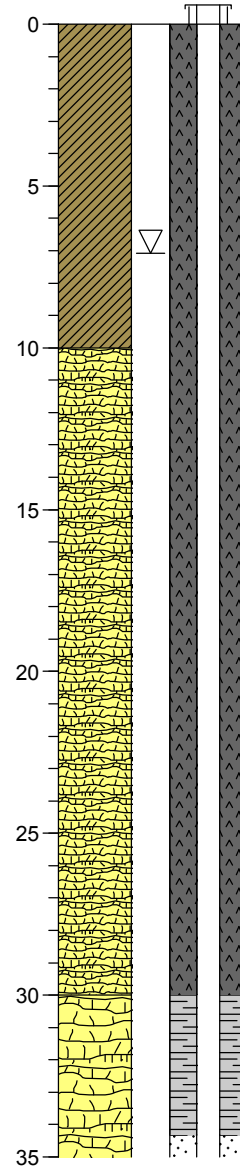
Drilling Start Date:	**09/11/2022**	Boring Depth (ft):	**50**	Well Depth (ft TOC):	**50.75**
Drilling End Date:	**09/11/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**7.1**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**391.52 NAV88**	Screen Material:	**Sch 40 PVC Slotted**
Driller:	**C. Franklin**	Top of Casing Elevation:	**394.45 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**D. Kegley**	North, East (Y,X):	**1165226.62, 2556252.71**	Filter Pack:	**20/40 Sand**



DEPTH (ft)	Sample Type	Recovery (%)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
0	GR		(0') CLAY (CL); reddish-brown, damp, soft, medium plasticity, trace sand (saprolite).	Hand augered 0-10 feet bgs. Filter Pack: ~2.0 ft^3 Bentonite: ~0.71 ft^3 Grout: ~5.0 ft^3	390
10	CB	100	(10') SAPROLITE; light brown, wet, soft, medium plasticity, micaceous with some relict rock structure.		380
15			(17') SAPROLITE; reddish-brown, wet, loose, increased relict rock structure with trace rock fragments.		375
20	CB	100	(20') Micaceous with increased relict rock structure.		370
25					365
30	CB	100	(30') PARTIALLY WEATHERED ROCK (PWR); light brown, wet, silty sand texture with some clay, relict rock structure with some rock fragments, transitionally weathered.		360
35			(33') PWR; light brown, wet, silty sand texture with some rock fragments, transitionally weathered.		

NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+2.93 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-09
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Drilling Start Date:	**09/11/2022**	Boring Depth (ft):	**50**	Well Depth (ft TOC):	**50.75**
Drilling End Date:	**09/11/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**7.1**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**391.52 NAV88**	Screen Material:	**Sch 40 PVC Slotted**
Driller:	**C. Franklin**	Top of Casing Elevation:	**394.45 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**D. Kegley**	North, East (Y,X):	**1165226.62, 2556252.71**	Filter Pack:	**20/40 Sand**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	Sample Type	Recovery (%)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
35				CB	100			355
40				CB	100	(40') PWR; light brown, wet, silty sand texture with some rock fragments and some relict rock structure, transitionally weathered.		350
45						(44') PWR; light brown, saturated, angular coarse sand texture, transitionally weathered.		345
50						(48') GNEISS; competent rock with multiple fractures and iron oxide staining.		
						(50') Boring terminated.		

NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+2.93 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-10
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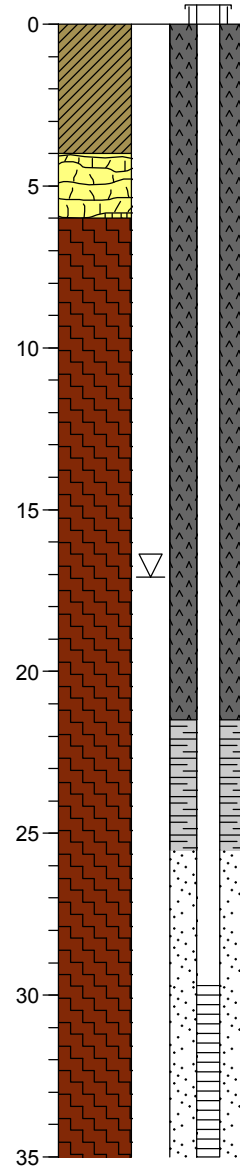
Drilling Start Date:	**11/15/2022**	Boring Depth (ft):	**40**	Well Depth (ft TOC):	**43.1**
Drilling End Date:	**11/15/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**17.1**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**383.02 NAV88**	Screen Material:	**Sch 40 PVC Pre-Pack**
Driller:	**D. Wilcox**	Top of Casing Elevation:	**386.07 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**T. Payne**	North, East (Y,X):	**1165215.38, 2556788.96**	Filter Pack:	**20/40 Sand**



DEPTH (ft)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
0	(0') SANDY CLAY (CL); reddish brown, moist, soft, medium plasticity, cohesive, organic.	Hand augered 0-7 feet bgs.	380
5	(4') PARTIALLY WEATHERED ROCK (PWR); yellowish-brown, moist, loose, well-graded, fine to medium grained subangular sand with 35% fines.	Filter Pack: ~2.5 ft^3 Bentonite: ~0.83 ft^3 Grout: ~3.6 ft^3	
	(6') GNEISS; light biotite foliation with some potassium feldspar inclusions, iron oxide staining at 9.5 feet bgs.		375
10			
			370
15	(13') GNEISS; increased biotite with some white foliations.		
	(17') Decreased biotite.		365
20	(20') Minor iron oxide staining from 20-23 feet bgs.		
			360
25	(26.5') Small fracture.		
			355
30	(30') White, some black foliation, potassium feldspar inclusions from 30-34 feet bgs.		
	(33.5') Fracture zone from 33.5-34 feet bgs.		350
35			

NOTES: Boring cleared with hand auger from 0-7 feet bgs. Well (+3.05 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-10
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Drilling Start Date:	**11/15/2022**	Boring Depth (ft):	**40**	Well Depth (ft TOC):	**43.1**
Drilling End Date:	**11/15/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**17.1**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**383.02 NAV88**	Screen Material:	**Sch 40 PVC Pre-Pack**
Driller:	**D. Wilcox**	Top of Casing Elevation:	**386.07 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**T. Payne**	North, East (Y,X):	**1165215.38, 2556788.96**	Filter Pack:	**20/40 Sand**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	Sample Type	Recovery (%)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
35								
				CB	100	(36') Increased biotite from 36-38 feet bgs. (37.5') Fracture zone from 37.5-38 feet bgs.		345
40						(40') Boring terminated.		

NOTES: Boring cleared with hand auger from 0-7 feet bgs. Well (+3.05 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-11
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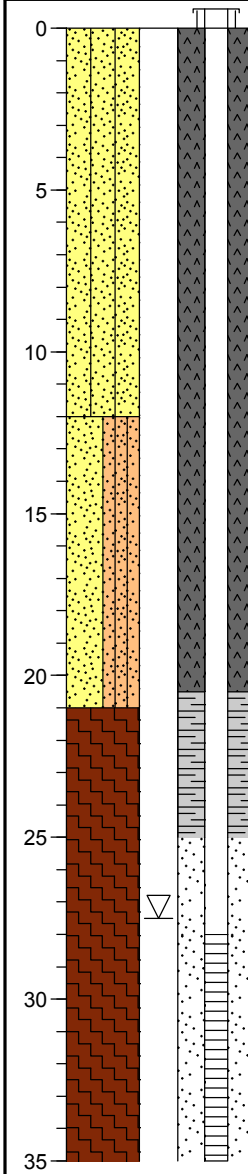
Drilling Start Date:	**11/16/2022**	Boring Depth (ft):	**40**	Well Depth (ft TOC):	**41.4**
Drilling End Date:	**11/16/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**27.5**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**Compact Crawler**	Ground Surface Elevation:	**381.3 NAV88**	Screen Material:	**Sch 40 PVC Pre-Pack**
Driller:	**D. Wilcox**	Top of Casing Elevation:	**384.46 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**J. Ivanowski**	North, East (Y,X):	**1164980.79, 2557271.69**	Filter Pack:	**20/40 Sand**



DEPTH (ft)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
0	(0') SILTY SAND (SM); dark red, moist, micaceous, residual soil.	Hand augered 0-10 feet bgs.	380
		Filter Pack: ~2.0 ft^3 Bentonite: ~0.75 ft^3 Grout: ~3.5 ft^3	
5			375
10	(9') SILTY SAND (SM); mottled yellow-brown red, moist to dry, micaceous, some rock fragments, relict rock structure (saprolite).		370
15	(12') SAND and SILT (SP-SM); mottled gray-pale yellow, dry, very stiff, micaceous, feldspathic, abundant rock fragments, PWR.		365
20	(20') Becoming noticeably harder.		
	(21') GNEISS; very hard, banded, rock was pulverized by dry drilling.		360
	(21.5') Possible fracture zone.	Switched to drilling with water.	
25	(26') Fractures with minor staining on surfaces.		355
	(27') Feldspar pegmatite.		
30	(29.5') Small fracture with minor staining.		
	(31') Small fracture with minor staining.		350
35			

NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+3.17 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-11
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Drilling Start Date:	**11/16/2022**	Boring Depth (ft):	**40**	Well Depth (ft TOC):	**41.4**
Drilling End Date:	**11/16/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**27.5**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**Compact Crawler**	Ground Surface Elevation:	**381.3 NAV88**	Screen Material:	**Sch 40 PVC Pre-Pack**
Driller:	**D. Wilcox**	Top of Casing Elevation:	**384.46 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**J. Ivanowski**	North, East (Y,X):	**1164980.79, 2557271.69**	Filter Pack:	**20/40 Sand**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	Sample Type	Recovery (%)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
35				CB	95	(34.5') Small fracture with minor staining. (37.5') Small fracture with minor staining.		345
40						(40') Boring terminated.		

NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+3.17 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-12
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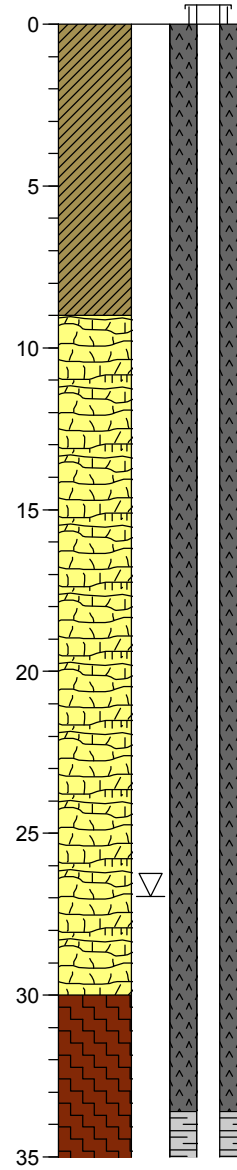
Drilling Start Date:	09/08/2022	Boring Depth (ft):	50.2	Well Depth (ft TOC):	53.2
Drilling End Date:	09/09/2022	Boring Diameter (in):	6	Well Diameter (in):	2
Drilling Company:	Cascade Drilling	Sampling Method(s):	Core Barrel	Screen Slot (in):	0.010
Drilling Method:	Sonic 4x6	DTW Post-Installation (ft):	27	Riser Material:	Sch 40 PVC
Drilling Equipment:	TSI-150	Ground Surface Elevation:	376.87 NAV88	Screen Material:	Sch 40 PVC Slotted
Driller:	C. Franklin	Top of Casing Elevation:	379.92 NAV88	Seal Material(s):	Grout, Bentonite
Logged By:	D. Kegley	North, East (Y,X):	1164623, 2557646.35	Filter Pack:	20/40 Sand



DEPTH (ft)	Sample Type	Recovery (%)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
0	GR		(0') SANDY CLAY (CL); reddish-brown, dry, stiff, low plasticity, micaceous with relict rock structure (saprolite).	Hand augered 0-10 feet bgs.	375
5				Filter Pack: ~2.0 ft^3 Bentonite: ~0.65 ft^3 Grout: ~5.6 ft^3	370
10	CB	55	(9') PARTIALLY WEATHERED ROCK (PWR); brownish gray, dry, silty sand texture with some fines and relict rock structure, transitionally weathered. (10') PWR; brownish gray, dry to damp, silty sand texture with some rock fragments, transitionally weathered.	Hard drilling	365
15					360
20	CB	45	(20') PWR; core advancement prohibited representative sample from being collected.	Driller indicated top of rock	355
25					350
30	CB	55	(30') GNEISS; competent rock with minor iron oxide staining and multiple fractures, some rounding on apertures.		345
35					

NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+3.05 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-12
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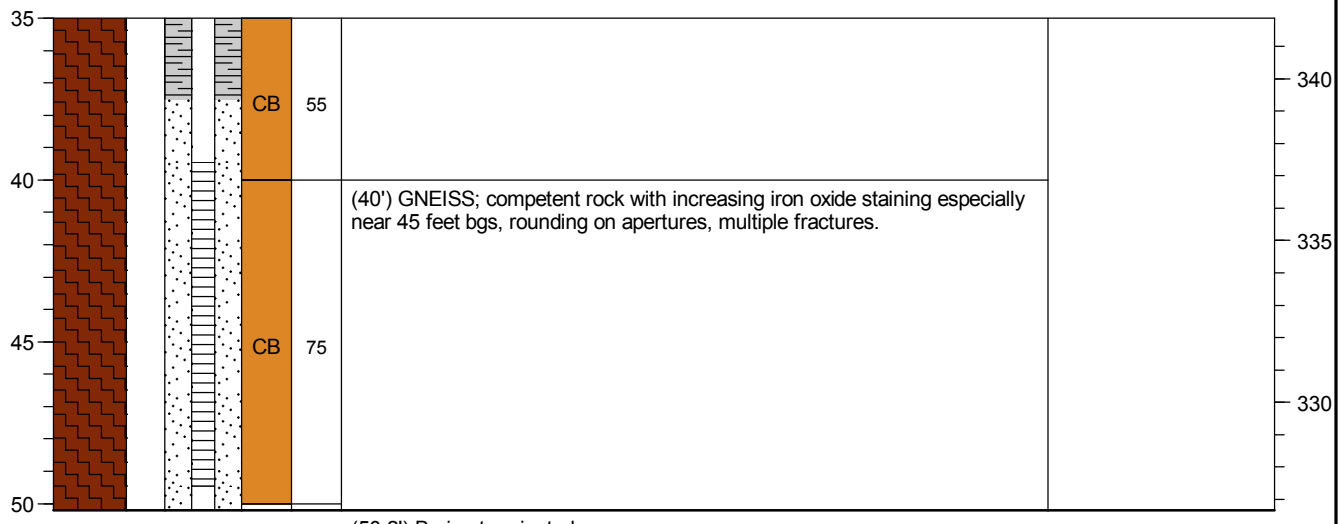
Drilling Start Date:	**09/08/2022**	Boring Depth (ft):	**50.2**	Well Depth (ft TOC):	**53.2**
Drilling End Date:	**09/09/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**27**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**376.87 NAV88**	Screen Material:	**Sch 40 PVC Slotted**
Driller:	**C. Franklin**	Top of Casing Elevation:	**379.92 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**D. Kegley**	North, East (Y,X):	**1164623, 2557646.35**	Filter Pack:	**20/40 Sand**



DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	Sample Type	Recovery (%)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
35				CB	55			340
40				CB	75	(40') GNEISS; competent rock with increasing iron oxide staining especially near 45 feet bgs, rounding on apertures, multiple fractures.		335
45								330
50						(50.2') Boring terminated.		

NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+3.05 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-13
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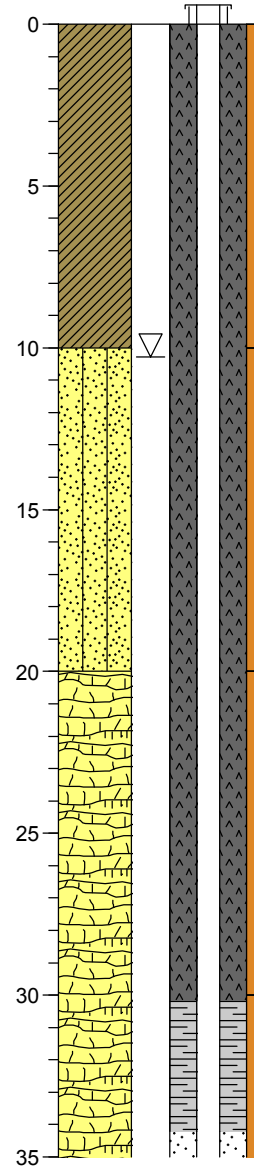
Drilling Start Date:	**09/07/2022**	Boring Depth (ft):	**50**	Well Depth (ft TOC):	**50.02**
Drilling End Date:	**09/07/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**10.3**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**386.55 NAV88**	Screen Material:	**Sch 40 PVC Slotted**
Driller:	**C. Franklin**	Top of Casing Elevation:	**389.26 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**D. Kegley**	North, East (Y,X):	**1164323.88, 2557823.21**	Filter Pack:	**20/40 Sand**



DEPTH (ft)	Sample Type	Recovery (%)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
0	GR		(0') CLAY (CL); reddish-brown, dry, medium stiff to stiff, low plasticity, trace sand and trace mica (saprolite).	Hand augered 0-10 feet bgs. Filter Pack: ~2.5 ft^3 Bentonite: ~0.66 ft^3 Grout: ~5.0 ft^3	385
10	CB	85	(10') SILTY SAND (SM); dry, loose, micaceous (saprolite). (13') Becomes wet.		380
15			(15') SILTY SAND (SM); reddish-brown to gray, wet, loose, abundant relict rock structure with trace rock fragments (saprolite).		375
20	CB	85	(20') PARTIALLY WEATHERED ROCK (PWR); brownish gray, wet, sandy to silty sandy texture with relict rock structure and trace rock fragments, transitionally weathered.		370
25					365
30	CB	100	(30') Same as above.		360
35			(34') PWR; reddish-brown, wet, sandy clay texture with abundant relict rock		355

NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+2.71 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-13
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Drilling Start Date:	**09/07/2022**	Boring Depth (ft):	**50**	Well Depth (ft TOC):	**50.02**
Drilling End Date:	**09/07/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**10.3**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**386.55 NAV88**	Screen Material:	**Sch 40 PVC Slotted**
Driller:	**C. Franklin**	Top of Casing Elevation:	**389.26 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**D. Kegley**	North, East (Y,X):	**1164323.88, 2557823.21**	Filter Pack:	**20/40 Sand**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	Sample Type	Recovery (%)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
35						structure and trace rock fragments, transitionally weathered.		350
				CB	100	(36.5') PWR; grayish brown, wet, coarse sand texture with some fines, relict rock structure with some rock fragments, transitionally weathered.		
40						(40') PWR; reddish-brown to gray, wet, sandy clay texture with relict rock structure and some rock fragments, transitionally weathered.		345
45				CB	100			
						(46') PWR; reddish-brown, coarse sand texture with trace fines, some relict rock structure and some relict rock fragments, transitionally weathered.		340
50						(50') Boring terminated.		

NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+2.71 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-14
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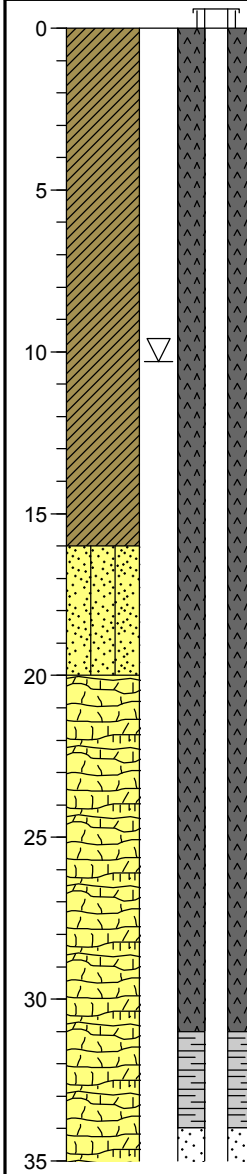
Drilling Start Date:	**09/01/2022**	Boring Depth (ft):	**50**	Well Depth (ft TOC):	**49.42**
Drilling End Date:	**09/01/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**10.3**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**382.29 NAV88**	Screen Material:	**Sch 40 PVC Slotted**
Driller:	**C. Franklin**	Top of Casing Elevation:	**384.99 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**D. Kegley**	North, East (Y,X):	**1164274.06, 2558403.9**	Filter Pack:	**20/40 Sand**



DEPTH (ft)	Sample Type	Recovery (%)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
0	GR		(0') CLAY (CL); dry, medium stiff the stiff, low plasticity, some mica with trace relict rock structure (saprolite).	Hand augered 0-10 feet bgs.	380
5				Filter Pack: ~2.0 ft^3 Bentonite: ~0.5 ft^3 Grout: ~5.1 ft^3	375
10	CB	100	(10') CLAY (CL); reddish-brown, damp to wet, soft, micaceous with some relict rock structure and trace rock fragments (saprolite).		370
15			(16') SILTY SAND (SM); reddish-brown, damp, loose, some relict rock structure with trace rock fragments and trace clay (saprolite).		365
20	CB	80	(20') PARTIALLY WEATHERED ROCK (PWR); reddish-brown, wet, silty sand texture with abundant relict rock structure and some rock fragments, transitionally weathered.		360
25					355
30	CB	50	(30') Increased rock fragments.		350
35					

NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+2.7 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-14
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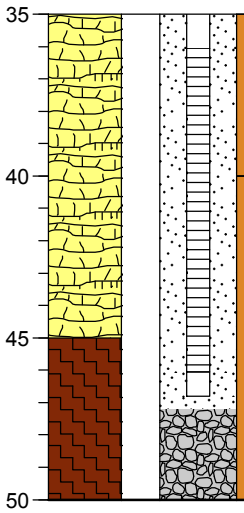
Drilling Start Date:	**09/01/2022**	Boring Depth (ft):	**50**	Well Depth (ft TOC):	**49.42**
Drilling End Date:	**09/01/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**10.3**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**382.29 NAV88**	Screen Material:	**Sch 40 PVC Slotted**
Driller:	**C. Franklin**	Top of Casing Elevation:	**384.99 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**D. Kegley**	North, East (Y,X):	**1164274.06, 2558403.9**	Filter Pack:	**20/40 Sand**



DEPTH (ft)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
40	(40') PWR; grayish brown, damp, silty sand texture with relict rock structure and abundant rock fragments, transitionally weathered.		340
45	(45') GNEISS; competent with abundant fractures with abundant iron oxide staining, rounded apertures and visible degradation.		335
50	(50') Boring terminated.		

NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+2.7 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG

Well No. BRLFC-15
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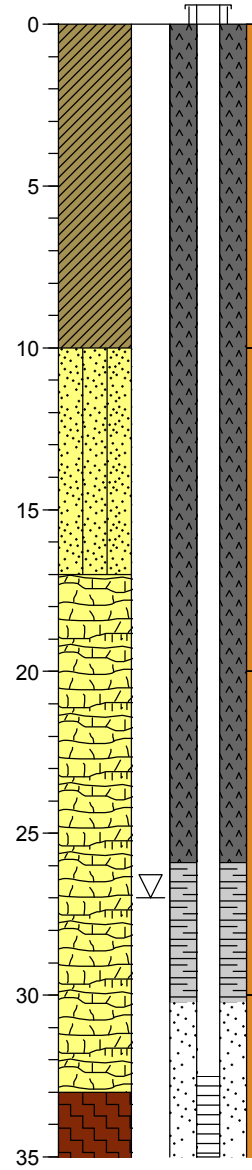
Drilling Start Date:	**11/17/2022**	Boring Depth (ft):	**45**	Well Depth (ft TOC):	**46.1**
Drilling End Date:	**11/18/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**27**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**396.2 NAV88**	Screen Material:	**Sch 40 PVC Pre-Pack**
Driller:	**D. Wilcox**	Top of Casing Elevation:	**399.33 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**D. Kegley**	North, East (Y,X):	**1164221.17, 2558948.77**	Filter Pack:	**20/40 Sand**



DEPTH (ft)	Sample Type	Recovery (%)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
0	GR		(0') SANDY CLAY (CL); reddish-brown, dry, soft, low to medium plasticity, micaceous, trace relict rock structure (saprolite).	Hand augered 0-10 feet bgs. Filter Pack: ~2.5 ft^3 Bentonite: ~0.71 ft^3 Grout: ~4.3 ft^3	395
5					
10	CB	100	(10') SILTY SAND (SM); grayish to reddish-brown, dry, loose, micaceous, trace clay, trace relict rock structure (saprolite).		390
15					385
20			(17') PARTIALLY WEATHERED ROCK (PWR); reddish-brown, dry, loose, silty sand texture, micaceous with clay, relict rock structure.		380
25	CB	100	(20') PWR; reddish-brown to gray, dry, loose, silty sand texture, some rock fragments, some relict rock structure, transitionally weathered.		375
30					370
35	CB	90	(33') GNEISS; highly fractured, rounded apertures on fractures, competent, iron oxide staining.		365

NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+3.13 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-15
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Drilling Start Date:	**11/17/2022**	Boring Depth (ft):	**45**	Well Depth (ft TOC):	**46.1**
Drilling End Date:	**11/18/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**27**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**396.2 NAV88**	Screen Material:	**Sch 40 PVC Pre-Pack**
Driller:	**D. Wilcox**	Top of Casing Elevation:	**399.33 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**D. Kegley**	North, East (Y,X):	**1164221.17, 2558948.77**	Filter Pack:	**20/40 Sand**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	Sample Type	Recovery (%)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
35								360
				CB	90			
40						(40') Multiple fractures from 40-43.5 feet bgs, iron oxide staining.		355
				GR	100			
45						(45') Boring terminated.		

NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+3.13 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-16
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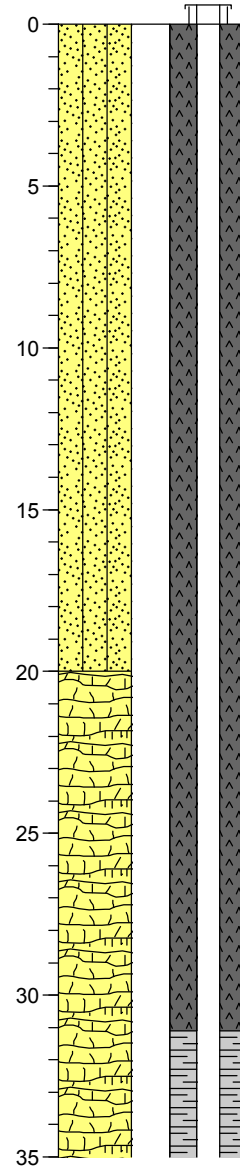
Drilling Start Date:	**11/18/2022**	Boring Depth (ft):	**50**	Well Depth (ft TOC):	**52.8**
Drilling End Date:	**11/19/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**36**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**416.77 NAV88**	Screen Material:	**Sch 40 PVC Pre-Pack**
Driller:	**D. Wilcox**	Top of Casing Elevation:	**419.59 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**D. Kegley**	North, East (Y,X):	**1163735.78, 2558883.99**	Filter Pack:	**20/40 Sand**



DEPTH (ft)	Sample Type	Recovery (%)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
0	CB		(0') SILTY SAND with CLAY (SM); reddish-brown, dry, loose, micaceous, trace relict rock structure (saprolite).	Hand augered 0-10 feet bgs. Filter Pack: ~2.5 ft^3 Bentonite: ~0.78 ft^3 Grout: ~5.2 ft^3	415
10	CB	70	(10') SILTY SAND (SM); reddish-brown, dry, loose, micaceous, trace clay, trace relict rock structure (saprolite).		405
15			(17') SILTY SAND (SM); light brown to gray, dry, loose, some clay, increased relict rock structure (saprolite).		400
20	CB	100	(20') PWR; light gray to brown, dry, loose, silty sand texture, some rock fragments, some relict rock structure.		395
25					390
30	CB	80			385
35					

NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+2.82 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

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Client: Southern Company Services
Project: Plant Branch Well Install
Address: 1100 Milledgeville Rd, Milledgeville, GA

WELL LOG
Well No. BRLFC-16
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Drilling Start Date:	**11/18/2022**	Boring Depth (ft):	**50**	Well Depth (ft TOC):	**52.8**
Drilling End Date:	**11/19/2022**	Boring Diameter (in):	**6**	Well Diameter (in):	**2**
Drilling Company:	**Cascade Drilling**	Sampling Method(s):	**Core Barrel**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic 4x6**	DTW Post-Installation (ft):	**36**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	Ground Surface Elevation:	**416.77 NAV88**	Screen Material:	**Sch 40 PVC Pre-Pack**
Driller:	**D. Wilcox**	Top of Casing Elevation:	**419.59 NAV88**	Seal Material(s):	**Grout, Bentonite**
Logged By:	**D. Kegley**	North, East (Y,X):	**1163735.78, 2558883.99**	Filter Pack:	**20/40 Sand**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	Sample Type	Recovery (%)	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
35						(35') Increased rock fragments.		380
				CB	80	(37') GNEISS; highly fractured, competent, visible degradation, iron oxide staining.		
40						(40') Highly fractured, iron oxide staining.		375
45				CB	35			370
50						(50') Boring terminated.		

NOTES: Boring cleared with hand auger from 0-10 feet bgs. Well (+2.82 feet stickup) completed with aboveground protective casing set in concrete. Well depth measured from the top of casing (TOC).

C. GROUNDWATER SAMPLING PROCEDURE

Groundwater sampling will be conducted using the most current applicable USEPA Region 4 SESD Field Branches Quality System and Technical Procedures as a guide (https://www.epa.gov/quality/quality-system-and-technical-procedures-sesd-field-branches). 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. 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.

GPC 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 GPC 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 using a water measuring device consisting of probe and measuring tape capable of measuring water levels with accuracy to 0.1 foot. Static water levels will be measured from each well, within a 24-hour period. The water level measuring device will be decontaminated prior to lowering in each well.

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 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. All non-dedicated pumps and wiring will be decontaminated before use and between well locations in general accordance with USEPA Laboratory Services and Applied Science Division *Field Equipment Cleaning and Decontamination* (LSASDPROC-205-R4), or the latest version of the document.

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 feet 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.

6. Monitor Indicator Parameters: Monitor and record the field indicator parameters [turbidity, temperature, specific conductance, pH, oxidation-reduction potential (ORP), and dissolved oxygen (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 for pH

   ±5% for specific conductance (conductivity)

±10% or ±0.2 mg/L (whichever is greater) for DO where DO>0.5mg/L. If DO<0.5mg/L no stabilization criteria apply

<5 NTU for turbidity

Temperature – Record only, not used for stabilization criteria

ORP – Record only, not used for stabilization criteria.

7. Collect samples at a flow rate between 100 and 200 mL/min according to the most current version of USEPA Region 4 SESD guidance document, *Operating Procedure – Groundwater Sampling* (EPA, SESDPROC-301-R4), 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. All 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 (i.e., >10 NTU), 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. A new filter must be used for each well and each sampling event. Filtered samples are not considered compliance samples and are only used to evaluate the effects of turbidity. Additional details related to managing for elevated turbidity is discussed below.

9. All 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 all non-dedicated equipment. Upon completion of all activity the well will be closed and locked.

13. Samples will be delivered to the laboratory following appropriate 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 latex or 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 NTU; however, samples may be collected where turbidity is less than 10 NTU and the stabilization criteria described above are met.

If sample turbidity is greater than 5 NTU and all other stabilization criteria have been met, samplers will continue purging for 3 additional hours in order to reduce the turbidity to 5 NTU or less.

- If turbidity remains above 5 NTU but is less than 10 NTU, and all other parameters are stabilized, the well can be sampled.
- Where turbidity remains above 10 NTU, 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 the COC form.