GROUNDWATER MONITORING PLAN

PLANT YATES
ASH POND 1

COWETA COUNTY, GEORGIA

FOR

Georgia Power

SEPTEMBER 2021

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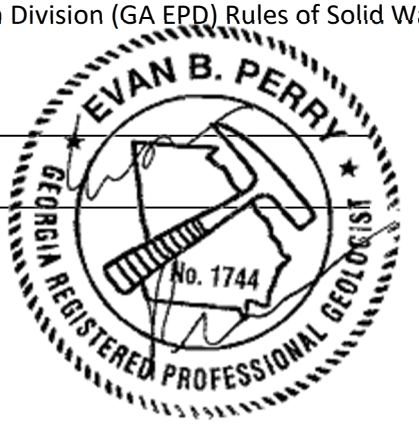
I. CERTIFICATION

I hereby certify that this Groundwater Monitoring Plan was prepared by, or under the direct supervision of, a "Qualified Groundwater Scientist," in accordance with the Georgia Environmental Protection Division (EPD) Rules of Solid Waste Management, Chapter 391-3-4.10(6). 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 the Georgia Environmental Protection Division (GA EPD) Rules of Solid Waste Management, Chapter 391-3-4.10(6).

Signature: _____

Date: 2021-09-14



1. INTRODUCTION

Groundwater monitoring is required by the Georgia Environmental Protection Division (EPD) to detect and quantify potential changes in groundwater chemistry. This Groundwater Monitoring Plan (plan) describes the groundwater monitoring program for the site. This plan meets the requirements of EPD rules and uses EPD's Manual for Ground Water Monitoring dated September 1991 as a guide. Groundwater monitoring well locations are presented on Figure A-1 of Appendix A and well construction details in Table 1 of Appendix A.

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

In accordance with the United States Environmental Protection Agency (USEPA) Coal Combustion Rule (CCR) (§257.90), which is incorporated in the Georgia State CCR Rule by reference, a detection monitoring well network for AP-1 has been installed. The existing monitoring wells were installed following the guidelines presented herein. Additionally, 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 EPD prior to the unscheduled installation or abandonment of monitoring wells. Well installation and/or abandonment must be directed by a qualified groundwater scientist. Currently, routine assessment monitoring is completed as required by 391-3-4.10(6)(a) and §257.95.

2. GEOLOGIC AND HYDROGEOLOGIC CONDITIONS

Geologic and hydrogeologic conditions for this site are described in a separate Hydrogeological Assessment report for AP-1. Former and inactive AP-1 was located within Plant Yates property.

Plant Yates lies within the Inner Piedmont of western Georgia, immediately southeast of the Brevard Fault Zone, an inactive fault which forms the northern boundary of the Inner Piedmont and the Dadeville Complex lithologies. The rocks in the area have been subjected to several episodes of metamorphism and intrusion by igneous bodies, creating a complex geologic picture. Surface expressions of the joints are observed on topographic maps and aerial photos of the Plant Yates area.

Granitic gneiss and schist units have been identified in the Plant Yates area. Both units are covered by a thick layer of saprolite. The schist unit is a sequence of amphibolites interlayered with chlorite schists and other metasedimentary rocks. Amphibolites are well foliated and may be retrograded to chlorite. The granitic gneiss is metamorphosed light-gray granitic pluton of medium- to coarse-grained texture. The unit is exposed in outcrops that trend northeast.

A thin layer soil from one to two feet thick overlies a thick layer of saprolite. The saprolite, which extends to typical depths of 20-40 feet below ground surface, was formed from the weathering of the underlying metamorphic rocks. There is typically a zone of variable thickness (approximately 5-20 feet) of weathered rock between the saprolite and competent bedrock.

Shallow groundwater is typically encountered near the saprolite/weathered rock interface. Bedrock becomes increasing competent with depth and movement of groundwater occurs only in fractures (i.e., secondary porosity). Recharge to the water-bearing zones in fractured bedrock takes place by seepage through the overlying mantle of soil/saprolite, or by direct entrance through openings in outcrops. A recent water table elevation contour map showing overall flow directions is provided in Appendix A, Figure A-2. Average depth of the water table at Plant Yates varies with topography (range of approximately 5 to 50 feet below ground surface).

At the site, groundwater in the saturated overburden represents the uppermost aquifer. This uppermost aquifer is comprised of both residual soils, saprolite, and partially weather rock, and is generally unconfined. It is recharged by precipitation stored in residual soils and typically discharges to streams. Groundwater stored in the overburden also recharges the underlying bedrock through preferentially weathered discontinuities in the bedrock and discharges to steams through inter-connected bedrock fractures. Hydraulic conductivity (K) is defined as the rate at which water can move through a permeable medium. In situ rising head and falling slug tests were performed at multiple locations at AP-1 to determine horizontal K values. Vertical K values for locations throughout Plant Yates were determined by laboratory testing of undisturbed overburden samples (Shelby Tubes) collected at multiple Plant Yates locations. The range in K values at these locations is small, indicating a fairly uniform hydrogeologic layers across the saprolite and weathered rock horizon (typically range from 10^{-3} cm/sec to 10^{-4} cm/sec). Appendix A, Table 1, Monitoring System Details, presents summaries of the K testing values from AP-1 monitoring wells and piezometers and laboratory test results for locations throughout Plant Yates. The values from the field and laboratory tests fall within the standard range of hydraulic conductivity values associated with a silty sand. Testing values are provided in Appendix B, Hydraulic Conductivity Testing Results.

The horizontal hydraulic gradient across the former AP-1 was measured during September 2020 groundwater monitoring event from YGWA-47 to PZ-09S resulting with an average estimated horizontal gradient of 0.026 ft/ft.

Average groundwater flow velocity in the AP-1 area is based on K, lateral gradient (i) and effective porosity (P_e). The average horizontal K for the site is 365 feet/year, and the gradient across AP-1 (September 2020) was 0.026 ft/ft, and the effective porosity (n_e) was estimated at 0.20. The average groundwater velocity is calculated as:

$V_{gw} = (K)(i)/n_e = ((365 \text{ ft/year}) (0.026 \text{ ft/ft})/0.20 \text{ ft/ft}) = 47 \text{ feet/year}.$

3. WELL LOCATIONS

Groundwater monitoring wells are installed to monitor the uppermost occurrence of groundwater beneath the site. Locations were selected based on the former waste unit layout and site geologic and hydrogeologic considerations. Locations were chosen to serve as upgradient (GWA designation) or downgradient (GWC designation) based on groundwater flow direction determined by potentiometric evaluation. The well naming nomenclature is based on Georgia EPD's Industrial Waste Disposal Site Design and Operations Plan – Supplemental Data for Solid Waste Handling Permit (undated).

A map depicting monitoring well locations is provided on Figure A-1 in Appendix A. A tabulated list of individual monitoring wells and piezometers (included in the potentiometric map) with well construction details such as location coordinates, top-of-casing elevations, well depths, and screened intervals is included in Table 1 of Appendix A. Any change to the groundwater monitoring network must be made by a minor modification to the permit pursuant to 391-3-4-4.10(6)(g)7.

Upgradient monitoring well YGWA-47 is utilized as part of the monitoring network system this well is located to the northeast of AP-1. There are 18 additional site-wide upgradient wells located within Plant Yates that are included in the overall upgradient monitoring network system. All 19 upgradient wells are included in Table 1 of Appendix A.

The following four downgradient monitoring wells are utilized as part of the monitoring network system: YGWC-44, YGWC-45, YGWC-46A, and YGWC-52. The monitoring well locations are shown in Appendix A, Figure A-1. Boring logs and well construction diagrams for the existing monitoring wells are provided In Appendix C, Boring Logs, Well Construction Diagrams, EPD Bond Continuation Certificates and Survey Data. Copies of the driller's EPD bond continuation certificates from the period of well installation (2007 – 2012) and June 2020 well re-survey data certified by Georgia Registered Land Surveyor are also included in Appendix C.

4. MONITORING WELL DRILLING, CONSTRUCTION, ABANDONMENT & REPORTING

The existing monitoring wells were installed following USEPA Region 4 Science and Ecosystem Support Division (SESD) Operating Procedure for Design and Installation of Monitoring Wells (USEPA, SESDGUID-101-R1) as a general guide for best practices. All well installation activities will be directed by a qualified groundwater scientist. Monitoring well construction data are provided on Table 1 of Appendix A.

4.1 DRILLING

A variety of well drilling methods are available for the purpose of installing groundwater wells. Drilling methodology may include, but not be limited to: hollow stem augers, direct push, air rotary, mud rotary, or rotosonic techniques. The drilling method shall minimize the disturbance of subsurface materials and shall not cause impact to the groundwater. Borings will be advanced using an appropriate drilling technology capable of drilling and installing a well in the site-specific geology. Monitoring wells will be installed using the most current version of the USEPA SESD SESDGUID-101-R1 as a general guide for best practices. Drilling equipment shall be decontaminated before use and between borehole locations using the procedures described in the latest version of the Region 4 U.S. Environmental Protection Agency Science and Ecosystem Support Division Operating Procedure for Field Equipment Cleaning and Decontamination as a guide.

Sampling and/or coring may be used to help determine the stratigraphy and geology. Samples will be logged by trained personnel working under the direction of a Professional Geologist/Engineer registered in the State of Georgia. Screen depths will be chosen based on the depth of the uppermost aquifer.

Drilling and well installation activities will be directed by a qualified groundwater scientist. All drilling for any subsurface hydrologic investigation, installation, or abandonment of groundwater monitoring wells must be performed by a driller that has, at the time of installation, a performance bond on file with the Water Well Standards Advisory Council.

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.

WELL CASINGS AND SCREENS

American Society for Testing and Materials International (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 EPD.

WELL INTAKE DESIGN

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

Each groundwater monitoring well will include a well screen designed to limit the amount of formation material passing into the well when it is purged and sampled. Screens with 0.010-inch slots have proven effective for the earth materials at the site and will be used unless geologic conditions discovered at the time of installation dictate a different size. Screen length shall not exceed 10 feet without justification as to why a longer screen is necessary (e.g., significant variation in groundwater level). If the above prove ineffective for developing a well with sufficient yield or acceptable turbidity, further steps will be taken to ensure 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 may be used for well construction. Pre-packed well screens combine a centralized inner well screen, a developed filter sand pack, and an outer conductor screen in one integrated unit composed of inert materials. Pre-packed well screens will be installed following general industry standards and using the latest version of the Region 4 U.S. Environmental Protection Agency Science and Ecosystem Support Division Operating Procedure for Design and Installation of Monitoring Wells as a general guide.

FILTER PACK AND ANNULAR SEAL

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

The materials used to seal the annular space must prevent hydraulic communication between strata and prevent migration from overlying areas into the well screen interval. A minimum of two feet of bentonite (chips, pellets, or slurry) will be placed immediately above the filter pack. The bentonite seal will extend up to the base of any overlying confining zone or the top of the water-bearing zone to prevent cementitious grout from entering the water-bearing or screened zone. If dry bentonite is used, the bentonite must be hydrated with potable water prior to grouting the remaining annulus.

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

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 pressure in the well to equalize with atmospheric pressure. In wells with above-ground protection, the space between the well casing and the protective casing 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 D, Groundwater Monitoring Well Detail, illustrates the general design and construction details for a monitoring well.

WELL DEVELOPMENT

Well development will be conducted under supervision of a certified groundwater professional. 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. Development can be discontinued once a turbidity of 10 NTU or less is achieved. Additionally, the stabilization criteria contained in Appendix E, Groundwater Sampling Procedures, should be met. A variety of techniques may be used to develop site groundwater monitoring wells. The method used must create reversals or surges in flow to eliminate bridging by particles around the well screen. These reversals or surges can be created by using surge blocks, bailers, or pumps. The wells will be developed using a pump capable of inducing the stress necessary to achieve the development goals. All development equipment will be decontaminated prior to first use and between wells. Well development data will be included in installation documentation reports.

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 a minimum, an equal volume purged from the well.

Many geologic formations contain clay and silt particles that are small enough to work their way through the wells' filter packs over time. Therefore, the turbidity of the groundwater from the monitoring wells may gradually increase over time after initial well development. As a result, the monitoring wells may have to be redeveloped periodically to remove the silt and clay that has worked its way into the filter pack of the monitoring wells. Each monitoring well should be redeveloped when sample turbidity values have significantly increased since initial development or since prior redevelopment. The redevelopment should be performed as described above.

4.3 ABANDONMENT

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

4.4 DOCUMENTATION

The following information documenting the construction and development of each well will be submitted to EPD by a qualified groundwater scientist within 60 days after completing all planned well installations.

- Well identification,
- Name of drilling contractor and type of drill rig,
- Documentation stating that a Georgia-registered professional surveyor shall certify that the horizontal accuracy for the installed monitoring wells is 0.5 feet, and vertical accuracy for top of casing elevations to 0.01 feet using a known datum,
- Documentation that the driller, at the time the monitoring wells were installed, had a bond on file with the Water Well Standards Advisory Council,
- Type of protective well cap and sump dimensions for each well,
- Dates of drilling and initial well emplacement,
- Drilling method and drilling fluid if used,
- Borehole diameter and well casing diameter,
- Well depth (±0.1 feet),
- Lithologic logs,
- Well casing materials,
- Screen materials and design (i.e., interval in feet below ground surface and elevation),
- Screen length,
- Screen slot size,
- Filter pack material/size and volume (placement narrative),
- Seal emplacement method and type/volume of sealant,
- Surface seal and volumes/mix of annular seal material,
- Well development date,
- Sealant materials and volume,
- Well turbidity following development,
- Narrative of well development method - specific well development,
- Documentation of ground surface elevation (±0.01 feet),
- Documentation of top of casing elevation (±0.01 feet), and
- Schematic of the well with dimensions

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 groundwater well will be collected and analyzed for 40 CFR 257, Subpart D, Appendix III and Appendix IV test parameters to establish a background statistical dataset. Subsequently, in accordance with 391-3-4-.10(6), the monitoring frequency for the Appendix III parameters will be at least semi-annual during the post-CCR removal monitoring period. Assessment monitoring was initiated on November 13, 2019 per Chapter 391-3-4-.10, Georgia Rules for Solid Waste Management.

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 USEPA Manual SW-846, EPA 600/4-79-020, Standard Methods for the Examination of Water and Wastewater (SM18-20), USEPA Methods for the Chemical Analysis of Water and Wastes (MCAWW), ASTM, or other suitable analytical methods approved by the Georgia EPD. The method used will be able to reach a suitable practical quantification limit to detect natural background conditions at the facility. The groundwater samples will be analyzed by licensed and accredited laboratories through the National Environmental Laboratory Accreditation Program (NELAP). Field instruments used to measure pH must be accurate and reproducible to within 0.1 Standard Units (S.U.).

TABLE 1
GROUNDWATER MONITORING PARAMETERS AND FREQUENCY

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

TABLE 2
ANALYTICAL METHODS

Parameters	EPA Method Number
Boron	6010D/6020B
Calcium	7140/6010D/6020B
Chloride	300.0/300.1/9250/9251/9253/9056A
Fluoride	300.0/300.1/9214/9056A
pH	150.1field/90405C
Sulfate	9035/9036/9038/300.0/300.1/9056A
Total Dissolved Solids (TDS)	160/2540C
Antimony	7040/7041/6010D/6020B
Arsenic	7060A/7061A/6010D/6020B
Barium	7080A/7081/6010D/6020B
Beryllium	7090/7091/6010D/6020B
Cadmium	7130/7131A/6020B
Chromium	7190/7191/6010D/6020B
Cobalt	7200/7201/6010D/6020B
Fluoride	300.0/300.1/9214/9056A
Lead	7420/7421/6010D/6020B
Lithium	6010D/6020B
Mercury	7470A/7471B
Molybdenum	6010D/6020B
Selenium	7740/7741A/6010D/6020B
Thallium	7840/7841/6010D/6020B
Radium 226 and 228 combined	903/9320/9315

6. SAMPLE COLLECTION

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

For groundwater sampling, positive gas displacement PVC, 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. The applied groundwater purging, and sampling methodologies will be discussed in the groundwater semi-annual monitoring reports submitted to EPD.

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 shall be submitted in accordance with Rule 391-3-4-.02(3)(b)(6) 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
- Notated date(s) and time(s) of sample transfer between individuals
- Signature of person(s) involved in the chain of possession
- Dates of possession by each individual

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

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

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

8. FIELD AND LABORATORY 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 will be collected by filling additional containers at the same location, and the field duplicate is assigned a unique sample identification number. One blind field duplicate will be collected for every 20 samples.

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

Calibration of field instruments will occur daily and follow the recommended (specific) instrument calibration procedures provided by the manufacturer and/or equipment manual specific to each instrument. Daily calibration will be documented on field forms and these field forms will be included in all groundwater monitoring reports. Instruments will be recalibrated as necessary (e.g., when calibration checks indicate significant variability), and all checks and recalibration steps will also 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 provided as part of each groundwater report's quality control documentation.

Groundwater samples will be analyzed by licensed and accredited laboratories through the NELAP.

9. REPORTING RESULTS

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

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

2. A brief overview of purging/sampling methodologies.

3. Discussion of results.

4. Recommendations for the future monitoring consistent with the Rules.

5. Potentiometric surface contour map for the aquifer being monitored, signed and sealed by a Georgia-registered P.G. or P.E.

6. 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.

7. Groundwater flow rate and direction calculations.

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

9. 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.

10. If applicable, semiannual assessment monitoring results.

11. Any alternate source demonstration completed during the previous monitoring period, if applicable.

12. Laboratory Reports.

13. COC documentation.

14. Field sampling logs including field instrument calibration, indicator parameters and parameter stabilization data.

15. Field logs and forms for each sampling event to include, but not limited to, well signage, well access, sampling and purging equipment condition, and any site conditions that may affect sampling.

16. Documentation of non-functioning wells.

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

18. Statistical analyses.

19. Certification by a qualified groundwater scientist.

10. 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. All 19 upgradient wells at Plant Yates are included in site background.

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

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

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

3. Another statistical test method (such as prediction limits or control charts) that meets the performance standards of §257.93(g) [§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).

An interwell statistical method will be used to compare Appendix III groundwater monitoring data to background conditions. Confidence intervals will be constructed for each downgradient well and used to compare Appendix IV groundwater monitoring data to groundwater protection standards.

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

FIGURE 1. STATISTICAL ANALYSIS PLAN OVERVIEW

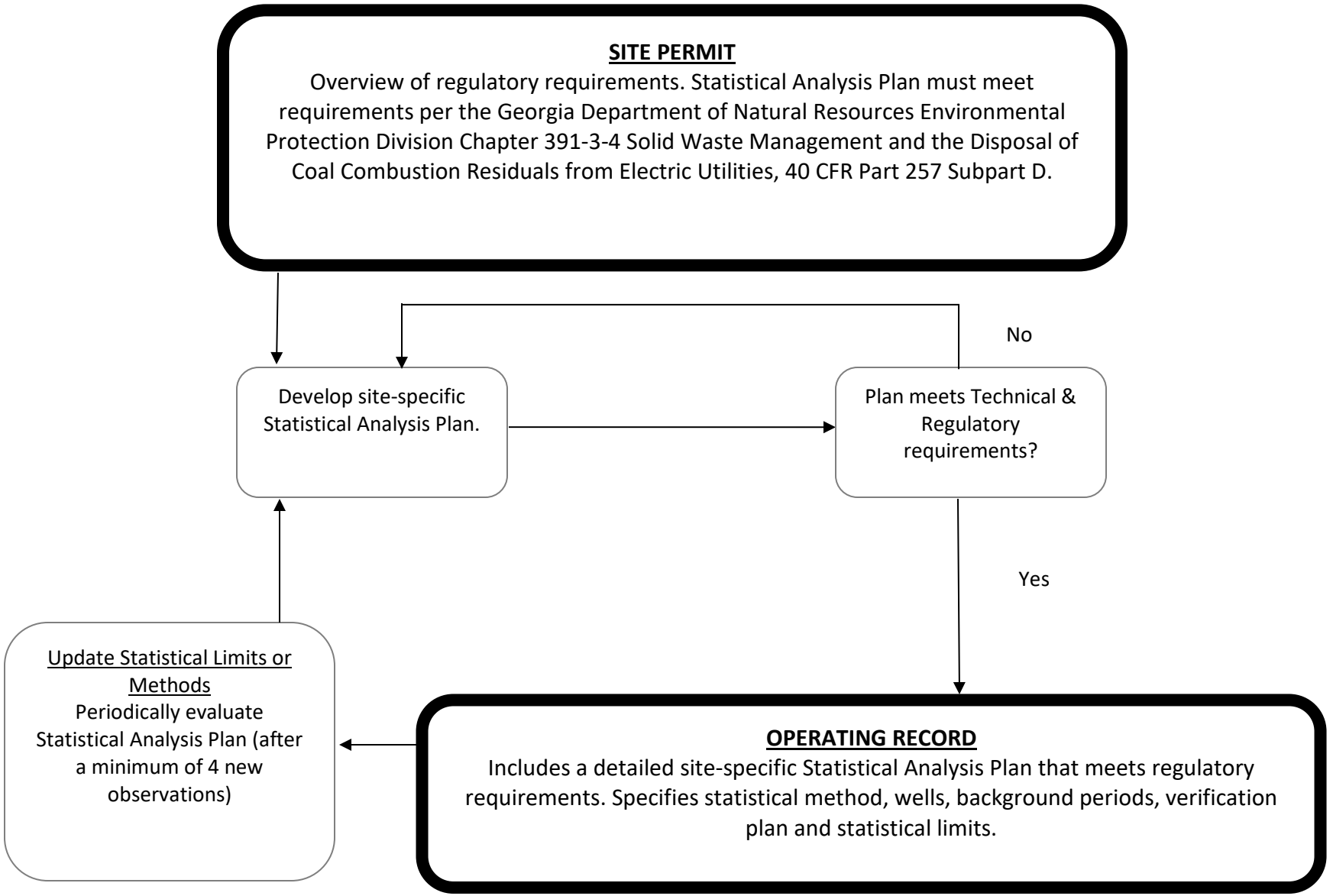
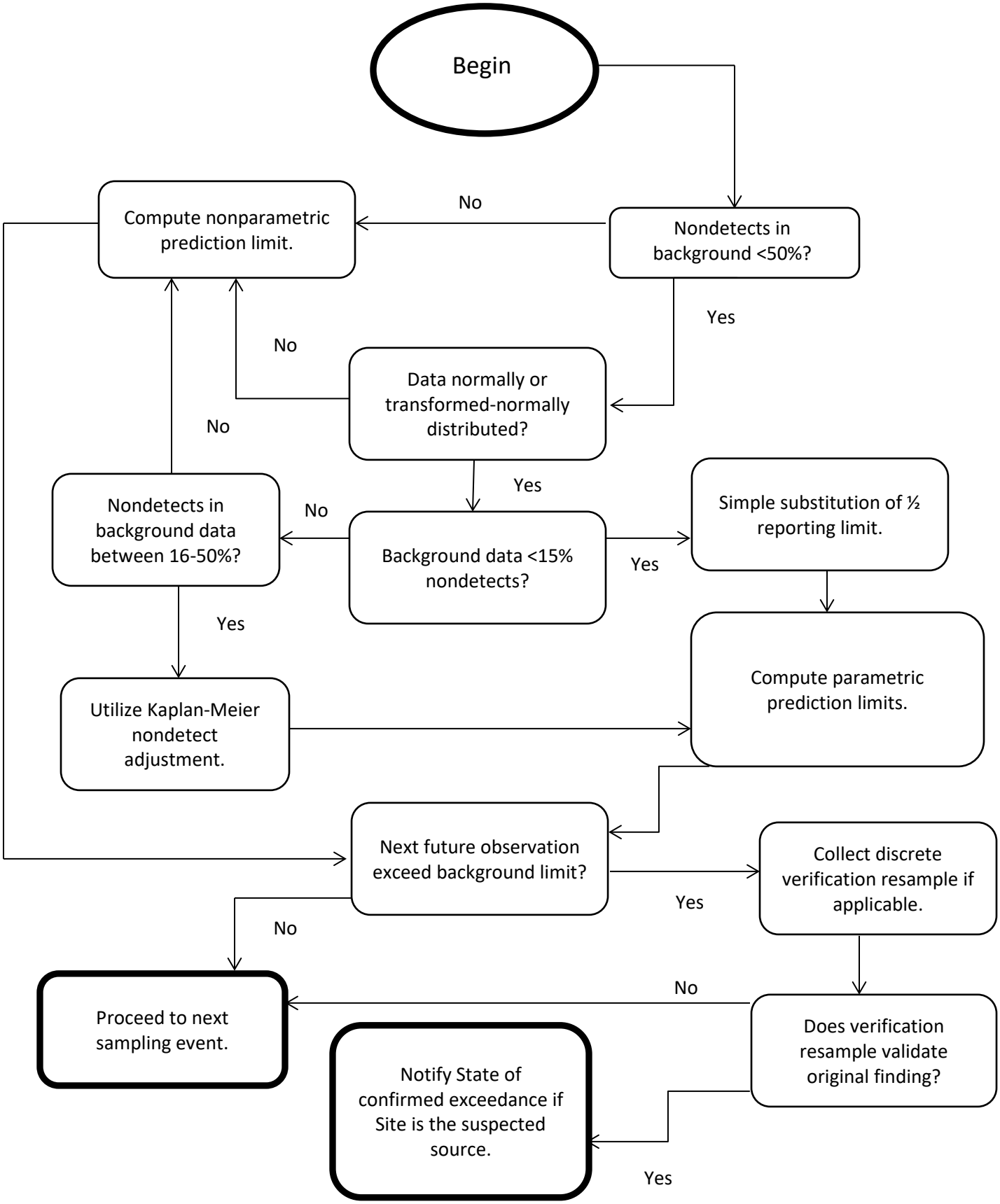


FIGURE 2. DECISION LOGIC FOR COMPUTING PREDICTION LIMITS



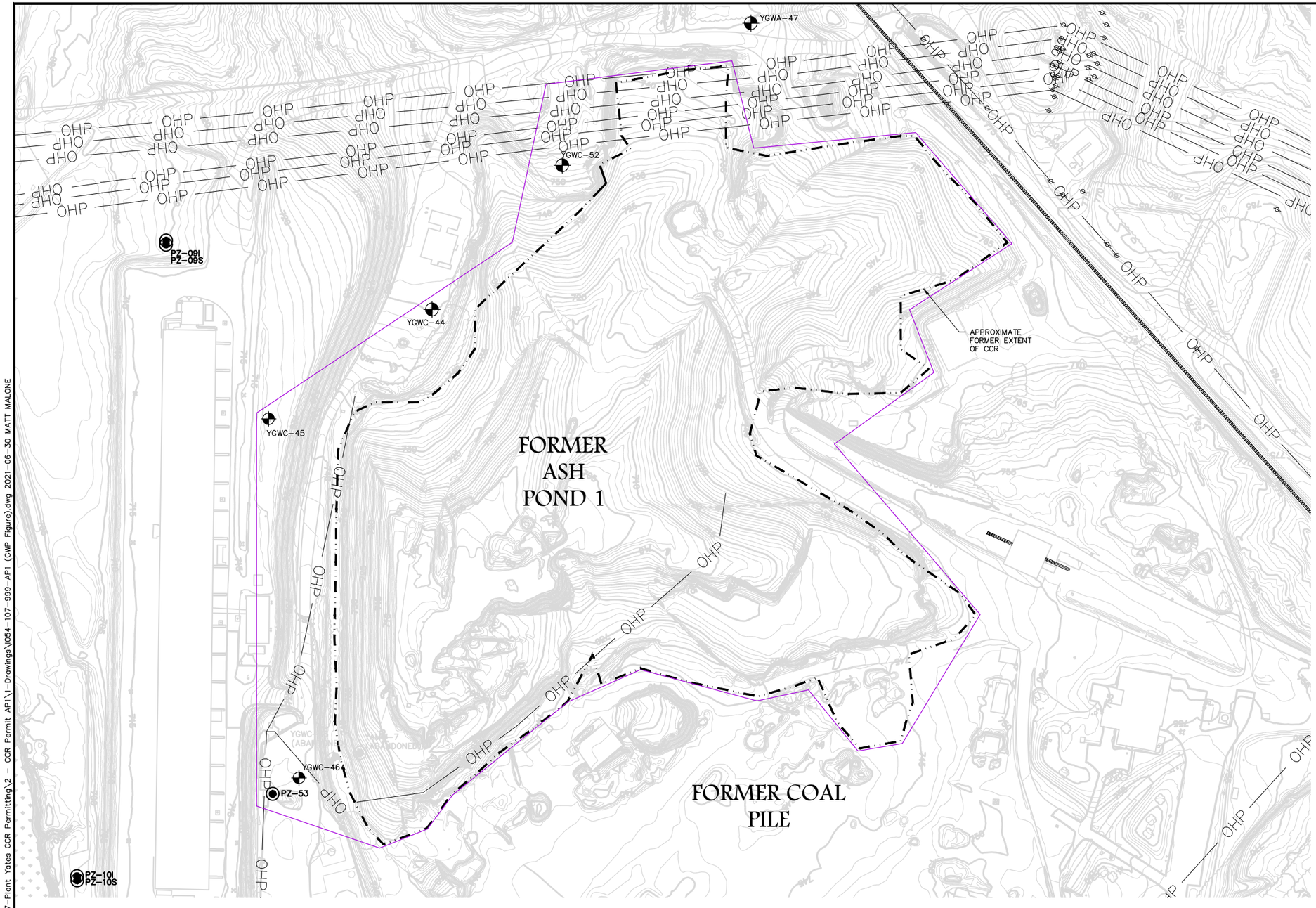
APPENDICES

APPENDIX A. MONITORING SYSTEM DETAILS

TABLE 1
GROUNDWATER MONITORING WELL CONSTRUCTION DETAILS

Monitoring Well ID	Hydraulic Location	Total Depth (ft BTOC)	Top of Casing (ft)	Screened Interval Elevation (ft)	Depth to Groundwater (ft BTOC)	September 2020 Groundwater Elevation (ft)	Screened Lithology	Horizontal Hydraulic Conductivity (cm/sec)	Vertical Hydraulic Conductivity (cm/sec)
GWA-2	Upgradient	52.02	805.62	763.8 - 753.8	34.98	770.64	PWR	1.46E-03	n/a
YGWA-1I	Upgradient	53.60	836.60	793.3 - 783.3	36.71	799.89	PWR	1.80E-04	n/a
YGWA-1D	Upgradient	128.85	837.25	759.2 - 709.2	48.22	789.03	Bedrock	6.17E-05	n/a
YGWA-2I	Upgradient	63.75	866.25	812.8 - 802.8	44.18	822.07	PWR	3.53E-06	n/a
YGWA-3I	Upgradient	59.05	796.55	747.7 - 737.7	53.32	743.23	PWR	1.16E-04	n/a
YGWA-3D	Upgradient	134.18	796.78	712.9 - 662.9	23.41	773.37	Bedrock	4.90E-04	n/a
YGWA-4I	Upgradient	48.81	784.21	745.7 - 735.7	23.45	760.76	PWR	8.55E-05	n/a
YGWA-5I	Upgradient	58.94	784.54	735.9 - 725.9	19.82	764.72	PWR	2.90E-04	n/a
YGWA-5D	Upgradient	129.13	784.53	706.0 - 656.0	22.51	762.02	Bedrock	1.11E-04	n/a
YGWA-14S	Upgradient	34.96	748.76	724.1 - 714.1	17.37	731.39	Saprolite	4.94E-04	n/a
YGWA-17S	Upgradient	39.85	783.05	753.2 - 743.2	12.62	770.43	Saprolite	3.46E-04	6.91E-04
YGWA-18S	Upgradient	39.97	790.57	760.9 - 750.9	20.39	770.18	Saprolite	1.06E-04	n/a
YGWA-18I	Upgradient	79.97	790.57	720.9 - 710.9	23.59	766.98	PWR	6.42E-04	n/a
YGWA-20S	Upgradient	29.52	767.12	747.9 - 737.9	11.44	755.68	Saprolite	2.93E-04	9.72E-05
YGWA-21I	Upgradient	79.90	783.70	714.1 - 704.1	31.29	752.41	PWR	2.20E-05	n/a
YGWA-30I	Upgradient	59.48	762.58	713.4 - 703.4	48.47	714.11	PWR	2.27E-03	n/a
YGWA-39	Upgradient	68.59	818.19	760.1 - 750.1	21.81	796.38	PWR	1.85E-03	n/a
YGWA-40	Upgradient	48.23	815.73	778.0 - 768.0	25.44	790.29	PWR	6.50E-04	n/a
YGWA-47	Upgradient	59.19	758.22	709.6 - 699.6	33.38	724.84	PWR	8.04E-04	n/a
YGWC-44	Downgradient	90.00	758.35	680.0 - 670.0	49.41	708.94	Bedrock	1.09E-04	n/a
YGWC-45	Downgradient	74.00	719.36	656.5 - 646.5	22.43	697.05	Bedrock	4.06E-04	n/a
YGWC-46A	Downgradient	70.81	733.04	672.3 - 662.3	38.56	695.08	Bedrock	n/a	n/a
YGWC-52	Downgradient	79.28	755.86	686.6 - 676.6	36.93	718.56	Bedrock	n/a	n/a

Notes:
ft BTOC = feet below top of casing; cm/sec = centimeters per second
Elevation in U.S. Survey Feet (NAVD88) based on June 2020 survey.
PWR = Partially Weathered Rock
n/a = not applicable
Hydraulic Conductivity data are averages



NOTE:

TOPOGRAPHIC SURVEY DATED MAY 26, 2017.

LEGEND:

- EX. PROMINENT CONTOUR
- EX. INTERMEDIATE CONTOUR
- RAILROAD TRACK
- WETLANDS
- YGWC-46A GROUNDWATER WELL (Existing)
- PZ-10S PIEZOMETER (NON-NETWORK)
- FORMER LIMITS OF WASTE DISPOSAL
- PERMIT BOUNDARY

200 0 100 200 400

SCALE: 1" = 200' (IN FEET)

N

ATLANTIC COAST CONSULTING, INC.
1150 Northmeadow Pkwy
Suite 100
Roswell, GA 30076
o 770.594.5998
www.atlcc.net

PROJECT:

PLANT YATES
ASH POND 1

708 DYER ROAD
NEWNAN, GEORGIA

REVISIONS

1. Revised CCR Limits	09/28/2021

Drawn by: MM

Checked by: EP

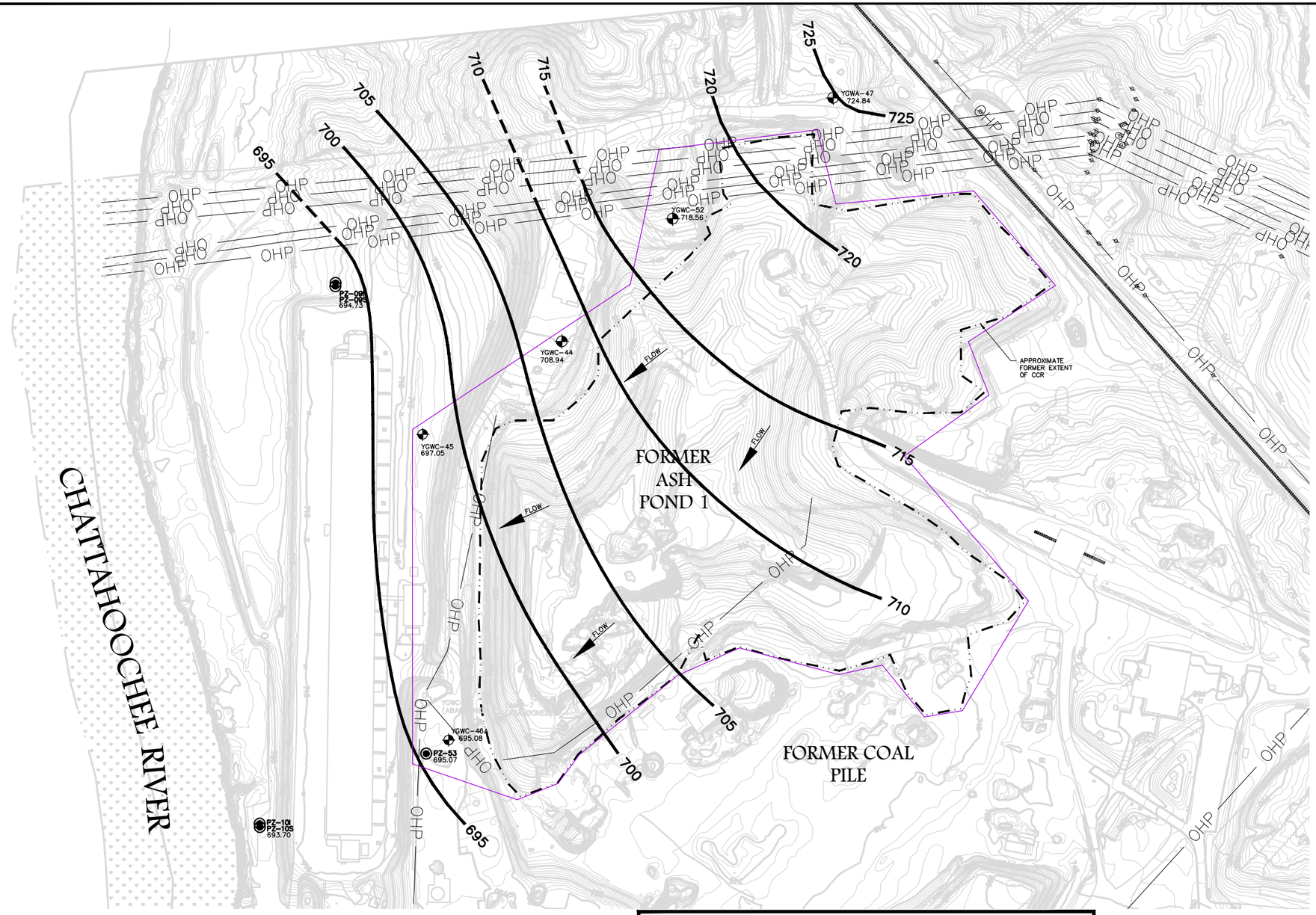
PROJECT NUMBER:

I054-110
September 2021

MONITORING
WELL NETWORK

FIGURE A-1

P:\Industrial\I054-Southern Company\107-Plant Yates CCR Permitting\2 - CCR Permit AP1\1-Drawings\I054-107-999-AP1 (GWP Figure).dwg, 2021-06-30 MATT MALONE



NOTE:

TOPOGRAPHIC SURVEY DATED MAY 26, 2017.

LEGEND:

- EX. PROMINENT CONTOUR
- EX. INTERMEDIATE CONTOUR
- 750 GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
- RAILROAD TRACK
- WETLANDS
- YGWC-46A GROUNDWATER WELL (Existing)
- PZ-10S PIEZOMETER (NON-NETWORK)
- FORMER LIMITS OF WASTE DISPOSAL
- PERMIT BOUNDARY

NOTES:
ELEVATION DATA ARE FEET NAVD88.
DEPTHS TO GROUNDWATER MEASURED SEPTEMBER 21, 2020.

250 0 125 250 500

SCALE: 1" = 250' (IN FEET)

N

ATLANTIC COAST CONSULTING, INC.
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Suite 100
Roswell, GA 30076
o 770.594.5998
www.atlcc.net

PROJECT:

PLANT YATES
ASH POND 1

708 DYER ROAD
NEWNAN, GEORGIA

REVISIONS

1. Revised CCR Limits	09/28/2010

Drawn by: MM
Checked by: EP

PROJECT NUMBER:

1054-107
September 2021

SEPTEMBER 2020
POTENTIOMETRIC
CONTOUR MAP

FIGURE A-2

P:\Industrial\054-Southern Company\107-Plant Yates CCR Permitting\2 - CCR Permit AP1\1-Drawings\054-107-999-AP1 (GWP Figure).dwg 2021-06-30 MATT MALONE

APPENDIX B. HYDRAULIC CONDUCTIVITY TESTING RESULTS

TABLE 1A
HORIZONTAL HYDRAULIC CONDUCTIVITY DATA SUMMARY

Location	Test	Hydraulic Conductivity (cm/sec)	Hydraulic Conductivity (ft/day)	Hydraulic Conductivity (ft/yr)
PZ-9S	Slug-In Test	2.79E-04	0.79	289
	Slug-Out Test	1.45E-04	0.41	150
PZ-9I	Slug-In Test	6.70E-05	0.19	69
	Slug-Out Test	3.88E-05	0.11	40
PZ-10S	Slug-In Test	1.59E-04	0.45	164
	Slug-Out Test	1.38E-04	0.39	142
PZ-10I	Slug-In Test	4.87E-03	13.80	5040
	Slug-Out Test	1.03E-02	29.10	10629
YGWA-47	Slug-In Test	8.24E-04	2.34	852
	Slug-Out Test	7.84E-04	2.23	811
YGWC-44	Slug-In Test	1.20E-04	0.34	124
	Slug-Out Test	9.71E-05	0.28	100
YGWC-45	Slug-In Test	4.42E-04	1.26	457
	Slug-Out Test	3.70E-04	1.05	383
YGWC-46	Slug-In Test	5.91E-04	1.68	611
	Slug-Out Test	6.56E-04	1.87	679
Slug-In Test Geometric Mean		3.73E-04	1.06	386
Slug-out Test Geometric Mean		3.73E-04	0.94	343

Notes:
1. Slug Tests on PZ-9S/I and PZ-10S/I completed in 2014, others performed in 2017.
2. cm/sec = centimeters per second; ft/day = feet per day; ft/yr = feet per year
3. Supporting data are provided in *Hydrogeologic Assessment Report* **(Part B of the Permit Application).**

TABLE 1B
SITEWIDE VERTICAL HYDRAULIC CONDUCTIVITY DATA SUMMARY

Location	Depth (ft bgs)	Hydraulic Conductivity (cm/sec)	Hydraulic Conductivity (ft/day)	Hydraulic Conductivity (ft/yr)
YGWA-17S	17 - 19	6.91E-04	1.96	715
YGWC-19S	17 - 19	1.78E-04	0.50	184
YGWA-20S	17 - 19	9.72E-05	0.28	101
YGWC-22S	7 – 9	1.63E-03	4.62	1688
YGWC-22S	17 - 19	4.66E-04	1.32	485
YGWC-24S	17 - 19	2.51E-03	7.11	2599
YGWC-24S	37 - 39	2.50E-05	0.07	26
PZ-25S	33 - 35	4.13E-05	0.12	43
PZ-25S	44 - 46	2.00E-04	0.57	207
YGWC-26S	17 - 19	1.79E-06	0.01	1.9
YGWC-26S	27 - 29	3.36E-05	0.10	35
YGWC-27S	17 - 19	4.58E-07	0.00	0.5
YGWC-27S	27 – 29	3.56E-06	0.01	3.7
YGWC-28S	17 - 19	2.08E-07	0.00	0.2
PZ-30S	27 – 29	1.38E-05	0.04	14
PZ-31S	44 – 46	7.85E-04	2.23	813
Geometric Mean		4.88E-05	0.14	51

Notes:

1. Data from Shelby Tube sample analysis completed by Cardno ATC, 2015.
2. All locations original IDs were originally pre-fixed with “PZ”; pre-fixes of locations incorporated into a groundwater monitoring network were changed to “YGWA” or “YGWC” as appropriate.
3. ft bgs = feet below ground surface
4. cm/sec = centimeters per second; ft/day = feet per day; ft/yr = feet per year
5. Supporting data are provided in Hydrogeologic Assessment Report (Part B of the Permit Application).

APPENDIX C. BORING LOGS, WELL CONSTRUCTION DIAGRAMS, EPD BOND CONTINUATION CERTIFICATES AND SURVEY DATA

RECORD OF BOREHOLE PZ-47/YGWA-47

SHEET 1 of 2

PROJECT: SCS Plant Yates
PROJECT NUMBER: 1660300
DRILLED DEPTH: 56.50 ft
LOCATION: Newnan, GA

DRILL RIG: Sonic PS-150
DATE STARTED: 7/10/16
DATE COMPLETED: 7/11/16

NORTHING: 1,262,411.84
EASTING: 2,071,818.05
GS ELEVATION: 755.6
TOC ELEVATION: 758.22

DEPTH W.L.: 21.6 ft (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 7/11/2016
TIME W.L.: 07:30

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES
0	755	0.00 - 10.00 no recovery; hydrovac			745.6				
10	745	10.00 - 13.00 silt SAND fining downward to low-plasticity CLAY, red, dry loose	SM-CL		10.00 742.6	1		6.00 6.00	
		13.00 - 20.00 sandy SILT, orange to white, loose, dry	ML		13.00 735.6				Portland – Type 1
20	735	20.00 - 21.00 highly weathered, mica schist, relict laminations (saprolite)			20.00 734.6	2		10.00 10.00	
		21.00 - 24.00 orange to white, loose, dry			21.00 731.6				
25	730	24.00 - 26.00 orange to white, relict laminations, loose, dry (saprolite)			24.00 729.6				
		26.00 - 28.00 well sorted sand with some silt, relict laminations, saprolite - schistose			26.00 727.6	3		3.00 4.00	
		28.00 - 30.00 orange to white, relict laminations, loose, dry			28.00 725.6				
30	725	30.00 - 36.00 transitionally weathered rock, highly weathered mica SCHIST, pulverized from drilling, dry	PWR		30.00 719.6	4		6.00 6.00	
35	720	36.00 - 46.00 bedrock - AMPHIBOLITE/SCHIST, deep oxide staining, secondary mineralization	SCHIST		36.00 709.6	5		3.00 10.00	Bentonite Pellets and – Chips
40	715								
45	710	46.00 - 56.00 AMPHIBOLITE/SCHIST grading to GNEISS, secondary mineralization, garnet, pyrite inclusions, some quartzite banding			46.00	6		7.00 10.00	0.010" Slotted – Screen
50		Log continued on next page							

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0.0'-46.1'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 46.1'-56.1'
Material: U-Pack Schedule 40 PVC
Diameter: 2'
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 43.4'-56.5'
Type: #1 Type Sand

FILTER PACK SEAL
Interval: 33.7'-43.4'
Type: Bentonite Pellets and Chips

ANNULUS SEAL
Interval: 0.0'-33.7'
Type: Portland Type 1

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

DRILLING METHODS
Soil Drill: 4" Sonic
Rock Drill: 4" Sonic

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

GA INSPECTOR: Ben Hodges
CHECKED BY: Rachel Kirkman, PG
DATE: 9/29/17

Golder Associates

BOREHOLE RECORD YATES BORING LOGS.GPJ PIEDMONT.GDT 9/26/17

RECORD OF BOREHOLE PZ-47/YGWA-47

PROJECT: SCS Plant Yates
PROJECT NUMBER: 1660300
DRILLED DEPTH: 56.50 ft
LOCATION: Newnan, GA

DRILL RIG: Sonic PS-150
DATE STARTED: 7/10/16
DATE COMPLETED: 7/11/16

NORTHING: 1,262,411.84
EASTING: 2,071,818.05
GS ELEVATION: 755.6
TOC ELEVATION: 758.22

DEPTH W.L.: 21.6 ft (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 7/11/2016
TIME W.L.: 07:30

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: SAMPLE NO.	SAMPLES: TYPE	SAMPLES: REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
50	705	46.00 - 56.00 AMPHIBOLITE/SCHIST grading to GNEISS, secondary mineralization, garnet, pyrite inclusions, some quartzite banding *(Continued)*				6		7.00 / 10.00	#1 Type Sand Sump	**WELL CASING** Interval: 0.0'-46.1' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded **WELL SCREEN** Interval: 46.1'-56.1' Material: U-Pack Schedule 40 PVC Diameter: 2' Slot Size: 0.010" End Cap: Schedule 40 PVC **FILTER PACK** Interval: 43.4'-56.5' Type: #1 Type Sand **FILTER PACK SEAL** Interval: 33.7'-43.4' Type: Bentonite Pellets and Chips **ANNULUS SEAL** Interval: 0.0'-33.7' Type: Portland Type 1 **WELL COMPLETION** Pad: 4'x4'x4" Protective Casing: Aluminum **DRILLING METHODS** Soil Drill: 4" Sonic Rock Drill: 4" Sonic
55	700				699.6					
		Boring completed at 56.50 ft			56.00					
60	695									
65	690									
70	685									
75	680									
80	675									
85	670									
90	665									
95	660									
100										

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

GA INSPECTOR: Ben Hodges
CHECKED BY: Rachel Kirkman, PG
DATE: 9/29/17

Golder Associates

BOREHOLE RECORD YATES BORING LOGS.GPJ PIEDMONT.GDT 9/26/17

RECORD OF BOREHOLE YGWC-44/ PZ-44

SHEET 1 of 2

PROJECT: SCS Plant Yates
PROJECT NUMBER: 1660300
DRILLED DEPTH: 87.00 ft
LOCATION: Newnan, GA

DRILL RIG: Sonic PS-150
DATE STARTED: 7/11/16
DATE COMPLETED: 7/13/16

NORTHING: 1,261,874.34
EASTING: 2,071,219.39
GS ELEVATION: 755.5
TOC ELEVATION: 758.35 ft

DEPTH W.L.: 34.1 ft (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 7/13/2016
TIME W.L.: N/A

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	755	0.00 - 10.00 No recovery; hydrovac			745.5					
10	745	10.00 - 17.00 silty SAND, red to light brown, moist, micaceous, plagioclase	SM		10.00 738.5	1		7.00 7.00		
15	740	17.00 - 27.00 poorly sorted SAND, fine to medium sand, dark red to tan, dry to moist	SP		17.00 728.5	2		10.00 10.00		
25	730	27.00 - 28.00 silty SAND, some clay, red	SM		27.00 727.5					
30	725	28.00 - 34.00 some gravel, red, increasing mica with depth, moist			28.00 721.5	3		10.00 10.00	Portland Type 1	
35	720	34.00 - 37.00 tan to grey, plagioclase with biotite			34.00 718.5					
40	715	37.00 - 47.00 tan to orange, occasional saprolite, biotite lenses			37.00 708.5	4		10.00 10.00		
45	710	47.00 - 57.00 medium to fine sand, some gravel, grey to tan, plagioclase, dry to moist			47.00	5		8.00 10.00		
50		Log continued on next page								

WELL CASING
Interval: 0.0'-75.5'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 75.5'-85.5'
Material: U-Pack Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010'
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 72.5'-87.0'
Type: #1 Type Sand

FILTER PACK SEAL
Interval: 67.0'-72.5'
Type: Bentonite Pellets and Chips

ANNULUS SEAL
Interval: 0.0'-67'
Type: Portland Type 1

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

DRILLING METHODS
Soil Drill: 4" Sonic
Rock Drill: 4" Sonic

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

GA INSPECTOR: Kirk Fraley
CHECKED BY: Rachel Kirkman, PG
DATE: 9/29/17

Golder Associates

BOREHOLE RECORD YATES BORING LOGS.GPJ PIEDMONT.GDT 9/26/17

RECORD OF BOREHOLE YGWC-44/ PZ-44

SHEET 2 of 2

PROJECT: SCS Plant Yates
PROJECT NUMBER: 1660300
DRILLED DEPTH: 87.00 ft
LOCATION: Newnan, GA

DRILL RIG: Sonic PS-150
DATE STARTED: 7/11/16
DATE COMPLETED: 7/13/16

NORTHING: 1,261,874.34
EASTING: 2,071,219.39
GS ELEVATION: 755.5
TOC ELEVATION: 758.35 ft

DEPTH W.L.: 34.1 ft (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 7/13/2016
TIME W.L.: N/A

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	705	47.00 - 57.00 medium to fine sand, some gravel, grey to tan, plagioclase, dry to moist *(Continued)*			698.5	5		8.00 / 10.00		
55	700	57.00 - 63.00 some gravel, grey-tan, weathered quartz lenses, dry-moist			57.00 692.5	6		8.00 / 10.00		
60	695									
65	690	63.00 - 66.00 transitionally weathered rock - with silty sand and gravel, grey, tan, quartz lenses	PWR		63.00 689.5					
70	685	66.00 - 87.00 bedrock - AMPHIBOLITE, grading to feldspathic Gneiss, fresh to weathered, strong foliation	SCHIST		66.00	7		7.00 / 10.00	Bentonite Pellets and Chips	**WELL CASING** Interval: 0.0'-75.5' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded **WELL SCREEN** Interval: 75.5'-85.5' Material: U-Pack Schedule 40 PVC Diameter: 2" Slot Size: 0.010' End Cap: Schedule 40 PVC **FILTER PACK** Interval: 72.5'-87.0' Type: #1 Type Sand **FILTER PACK SEAL** Interval: 67.0'-72.5' Type: Bentonite Pellets and Chips **ANNULUS SEAL** Interval: 0.0'-67' Type: Portland Type 1 **WELL COMPLETION** Pad: 4'x4'x4" Protective Casing: Aluminum **DRILLING METHODS** Soil Drill: 4" Sonic Rock Drill: 4" Sonic
75	680								0.010" Slotted Screen	
80	675					8		5.00 / 10.00	#1 Type Sand	
85	670				668.5				Sump	
		Boring completed at 87.00 ft								
90	665									
95	660									
100										

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

GA INSPECTOR: Kirk Fraley
CHECKED BY: Rachel Kirkman, PG
DATE: 9/29/17

Golder Associates

BOREHOLE RECORD YATES BORING LOGS.GPJ PIEDMONT.GDT 9/26/17

RECORD OF BOREHOLE YGWC-45/ PZ-45

SHEET 1 of 2

PROJECT: SCS Plant Yates
PROJECT NUMBER: 1660300
DRILLED DEPTH: 71.30 ft
LOCATION: Newnan, GA

DRILL RIG: Sonic PS-150
DATE STARTED: 7/9/16
DATE COMPLETED: 7/10/16

NORTHING: 1,261,668.95
EASTING: 2,070,912.60
GS ELEVATION: 716.5
TOC ELEVATION: 719.36 ft

DEPTH W.L.: 20.3 ft (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 7/10/2016
TIME W.L.: 08:20

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES SAMPLE NO.	SAMPLES TYPE	SAMPLES REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0	715	0.00 - 10.00 no recovery; hydrovac			706.5					**WELL CASING** Interval: 0.0'-60.0' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded
5	710									**WELL SCREEN** Interval: 60.0'-70.0' Material: U-Pack Schedule 40 PVC Diameter: 2' Slot Size: 0.010" Slotted Screen End Cap: Schedule 40 PVC
10	705	10.00 - 16.00 sandy SILT, reddish brown to light yellowish brown, cohesive, low plastic, moist	ML		10.00 700.5	1		6.00 6.00		**FILTER PACK** Interval: 58.0'-71.3' Type: #1 Type Sand
15	700	16.00 - 24.00 reddish brown to light yellowish brown, cohesive, low plastic, moist			16.00 692.5	2		10.00 10.00		**FILTER PACK SEAL** Interval: 51.0'-58.0' Type: Bentonite Pellets and Chips
20	695									**ANNULUS SEAL** Interval: 0.0'-51.0' Type: Portland Type 1
25	690	24.00 - 26.00 silty SAND, dark brown and angular trace gravel, yellowish grey, fine to medium sand, cohesive, moist 26.00 - 33.00 dark brown and angular trace gravel, yellowish grey, fine to medium sand, feldspar nodules, weathered amphibolite pieces, cohesive, moist	SM		24.00 690.5 26.00	3		10.00 10.00	Portland _ Type 1	**WELL COMPLETION** Pad: 4'x4'x4" Protective Casing: Aluminum
30	685				683.5					**DRILLING METHODS** Soil Drill: 4" Sonic Rock Drill: 4" Sonic
35	680	33.00 - 35.00 trace gravel, greenish black, fine to medium sand, coarse and angular gravel, dry 35.00 - 36.00 yellowish grey, dry 36.00 - 45.00 SAND, some gravel and silt, fine to coarse sand, subangular and highly weathered, dark reddish brown, increasing gravel, dry, loose	SW		33.00 681.5 35.00 680.5 36.00	4		10.00 10.00		
40	675				671.5					
45	670	45.00 - 46.00 SAND, some gravel and silt, fine to coarse sand, subangular and highly weathered, dark reddish brown, increasing gravel, saprolite texture noted, dry, loose 46.00 - 51.00 SAND, some gravel and silt, fine to coarse sand, subangular and highly weathered, dark reddish brown, gneissic fabric noted, increasing gravel, dry, loose (saprolite)			45.00 670.5 46.00	5		5.00 5.00		
50		Log continued on next page								

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

GA INSPECTOR: Ben Hodges
CHECKED BY: Rachel Kirkman, PG
DATE: 9/29/17

Golder Associates

BOREHOLE RECORD YATES BORING LOGS.GPJ PIEDMONT.GDT 9/26/17

RECORD OF BOREHOLE YGWC-45/ PZ-45

SHEET 2 of 2

PROJECT: SCS Plant Yates
PROJECT NUMBER: 1660300
DRILLED DEPTH: 71.30 ft
LOCATION: Newnan, GA

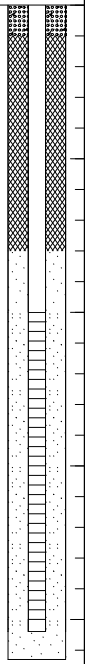
DRILL RIG: Sonic PS-150
DATE STARTED: 7/9/16
DATE COMPLETED: 7/10/16

NORTHING: 1,261,668.87
EASTING: 2,070,911.87
GS ELEVATION: 716.5
TOC ELEVATION: 719.36 ft

DEPTH W.L.: 20.3 ft (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 7/10/2016
TIME W.L.: 08:20

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLE NO.	TYPE	REC
50					665.5	5		
55	665	51.00 - 56.00 transitionally weathered rock - highly weathered garnet SCHIST, some amphibolite, coarse to fine sand	PWR		51.00 660.5	6		5.00/5.00
60	660	56.00 - 66.00 bedrock - AMPHIBOLITE/SCHIST, competent, pyrite inclusions	SCHIST		56.00 650.5	7		4.00/10.00
65	655							
70	650	66.00 - 71.00 competent, pyrite inclusions			66.00 645.5	8		4.00/5.00
75	645	Boring completed at 71.30 ft			71.00			
80	640							
85	635							
90	630							
95	625							
100	620							

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0.0'-60.0'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 60.0'-70.0'
Material: U-Pack Schedule 40 PVC
Diameter: 2'
Slot Size: 0.010" Slotted Screen
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 58.0'-71.3'
Type: #1 Type Sand

FILTER PACK SEAL
Interval: 51.0'-58.0'
Type: Bentonite Pellets and Chips

ANNULUS SEAL
Interval: 0.0'-51.0'
Type: Portland Type 1

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

DRILLING METHODS
Soil Drill: 4" Sonic
Rock Drill: 4" Sonic

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

GA INSPECTOR: Ben Hodges
CHECKED BY: Rachel Kirkman, PG
DATE: 9/29/17

Golder Associates

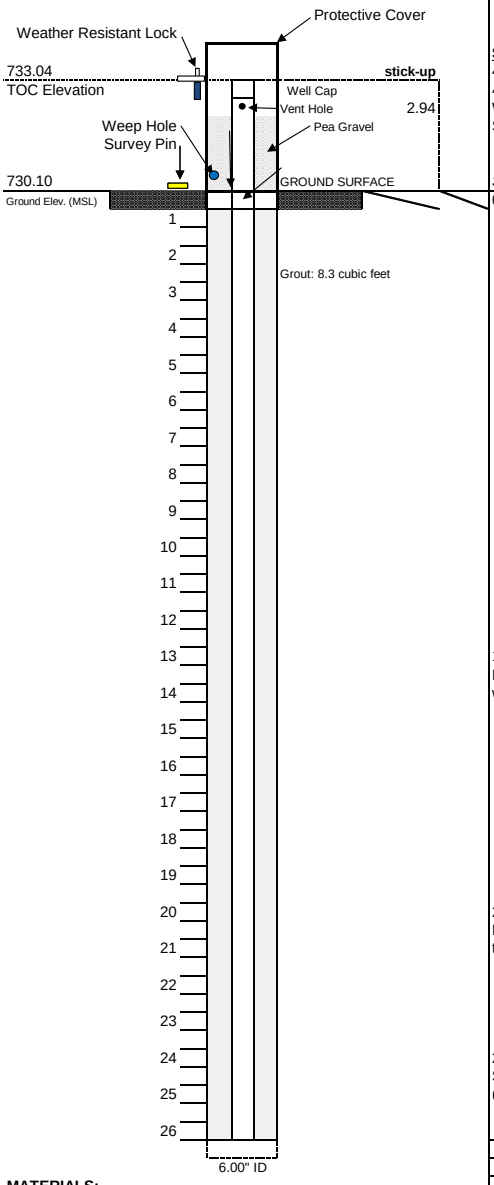
BOREHOLE RECORD YATES BORING LOGS.GPJ PIEDMONT.GDT 9/26/17

ATLANTIC COAST CONSULTING, INC.

YGWC-46A

BORING ID

PROJECT:	Plant Yates	**PROJECT NO.:**	I054-110
TOTAL DEPTH:	70.79 ft. BGS	**SITE LOCATION:**	Newnan, Georgia
DATE BEGIN:	1-Jun-2020	**DRILLER:**	Issac Young
DATE COMPLETE:	2-Jun-2020	**RIG TYPE:**	T-300 Rotosonic
INSTALLED BY:	Cascade	**METHOD:**	Rotosonic
SUPERVISED BY:	Jordan Berisford		
WATER 1ST ENCOUNTERED:	NA		
WATER AFTER 48 HOURS:	40.86' BTOC		



Northing: 1260994.59
Easting: 2070970.30

SURFACE COMPLETION:
4"x4" Aluminum Protective Casing
4'x4'x4" Concrete Pad
Weather Resistant Lock
Survey Pin

SOIL DESCRIPTION

0-13' Hydrovac. No observable cuttings

13'-20' (SM) Silty Sand
Light Grey (10YR 7/2), soft, moist, non-cohesive, non-plastic, well sorted

20-24' (SM) Silty Sand
Pale brown (2.5Y 7/3), dry, soft, non-plastic, non-cohesive, trace brittle micaceous rock

24'-29' (SM) Silty Sand
Same as above, increase in brittle micaceous rock
(5-10%) fine- coarse gravel, poorly sorted, sub-angular

Core Photos

MATERIALS:

GROUT:	Bentonite Grout
MANUFACTURER:	AquaGuard
BENTONITE SEAL:	3/8" Bentonite Pellets
MANUFACTURER:	Pel-Plug
FILTER PACK SAND:	20/30 Mesh
MANUFACTURER:	Southern Products
WELL SCREEN:	Sch. 40 - 2" PVC
MANUFACTURER:	Campbell Monoflex
SLOT SIZE:	0.010-Inch Slot
WELL CASING:	Sch. 40 - 2" PVC
MANUFACTURER:	Campbell Monoflex

Soil Descriptions from Unified Soil Classification System

BTOC - Below Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

ATLANTIC COAST CONSULTING, INC.

YGWC-46A

BORING ID

PROJECT:	Plant Yates	**PROJECT NO.:**	I054-110
TOTAL DEPTH:	70.79 ft. BGS	**SITE LOCATION:**	Newnan, Georgia
DATE BEGIN:	1-Jun-2020	**DRILLER:**	Issac Young
DATE COMPLETE:	2-Jun-2020	**RIG TYPE:**	T-300 Rotosonic
INSTALLED BY:	Cascade	**METHOD:**	Rotosonic
SUPERVISED BY:	Jordan Berisford		
WATER 1ST ENCOUNTERED:	NA		
WATER AFTER 48 HOURS:	40.86' BTOC		

Elevation MSL / Depth BGS

28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49

680.10 / 50.00 — Elevation / Depth

51
52

Top of Bentonite Seal
Bentonite Seal: 0.66 cubic feet

6.00" OD

29'-39'
No sample collected, rods became stuck and the drillers had to flush the rods to get them released. Samples lost while flushing rods.

39'-46'
Very hard competent rock. Geniss banding-no schist, little fractures, no iron staining present (5/7)`

46'-49'
same as above, increase fractures, a little iron staining present. (3/3) schist present

49'- 53'
Same as above (4/5)

MATERIALS:

GROUT:	Bentonite Grout
MANUFACTURER:	AquaGuard
BENTONITE SEAL:	3/8" Bentonite Pellets
MANUFACTURER:	Pel-Plug
FILTER PACK SAND:	20/30 Mesh
MANUFACTURER:	Southern Products
WELL SCREEN:	Sch. 40 - 2" PVC
MANUFACTURER:	Silver-Line
SLOT SIZE:	0.010-Inch Slot
WELL CASING:	Sch. 40 - 2" PVC
MANUFACTURER:	Silver-Line

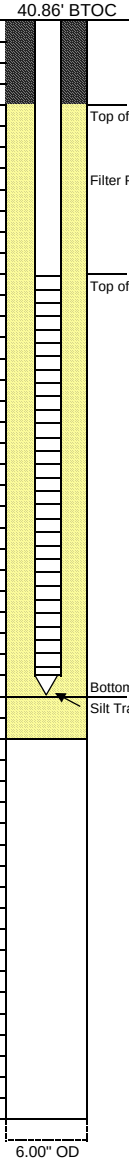
TOC - Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

ATLANTIC COAST CONSULTING, INC.

YGWC-46A

BORING ID

PROJECT:	Plant Yates	**PROJECT NO.:**	I054-110
TOTAL DEPTH:	70.79 ft. BGS	**SITE LOCATION:**	Newnan, Georgia
DATE BEGIN:	1-Jun-2020	**DRILLER:**	Issac Young
DATE COMPLETE:	2-Jun-2020	**RIG TYPE:**	T-300 Rotosonic
INSTALLED BY:	Cascade	**METHOD:**	Rotosonic
SUPERVISED BY:	Jordan Berisford		
WATER 1ST ENCOUNTERED:	NA		
WATER AFTER 48 HOURS:	40.86' BTOC		



53'-59'
Slightly fractured banded gniess, no iron staining present (6/6)

59'-65'
Increased fractured gniess/schist, no iron staining present
pyrite present in rock (3/6)

65'-66'
Well fractured rock, iron staining present, pyrite present in rock (1/1)

66'-69'
Hard competent gniess/schist, decrease in fractures, pyrite present in rock, no iron staining (3/3)

Boring Terminated at 69' BGS

MATERIALS:

GROUT:	Bentonite Grout
MANUFACTURER:	AquaGuard
BENTONITE SEAL:	3/8" Bentonite Pellets
MANUFACTURER:	Pel-Plug
FILTER PACK SAND:	20/30 Mesh
MANUFACTURER:	Southern Products
WELL SCREEN:	Sch. 40 - 2" PVC
MANUFACTURER:	Silver-Line
SLOT SIZE:	0.010-Inch Slot
WELL CASING:	Sch. 40 - 2" PVC
MANUFACTURER:	Silver-Line

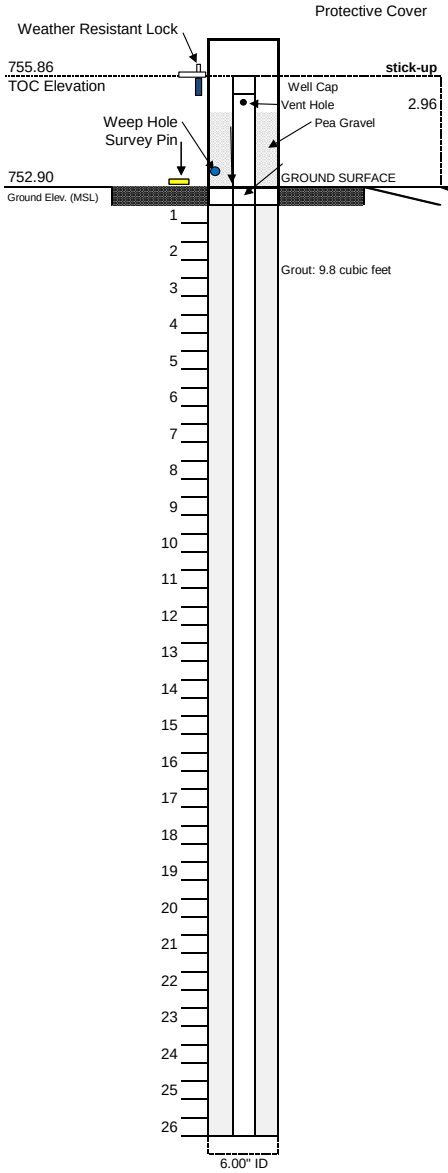
TOC - Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

ATLANTIC COAST CONSULTING, INC.

YGWC-52

BORING ID

PROJECT:	Plant Yates	**PROJECT NO.:**	I054-110
TOTAL DEPTH:	79.05 ft. BTOC	**SITE LOCATION:**	Newnan, Georgia
DATE BEGIN:	27-May-2020	**DRILLER:**	Isaac Young
DATE COMPLETE:	28-May-2020	**RIG TYPE:**	T-300 Rotosonic
INSTALLED BY:	Cascade	**METHOD:**	Rotosonic
SUPERVISED BY:	Jordan Berisford		
WATER 1ST ENCOUNTERED:	NA		
WATER AFTER 48 HOURS:	35.67' BTOC		



Northing: 1262145.22
Easting: 2071464.36

SURFACE COMPLETION:
4"x4" Aluminum Protective Casing
4'x4'x4" Concrete Pad
Weather Resistant Lock
Survey Pin

SOIL DESCRIPTION

0-12' Hydrovac. No observable cuttings

12'-14' (CL) Lean Clay
Light red (2.5YR 6/8), dry, mica present (≈25%), soft, cohesive
low-medium plasticity, saprolite, trace sand

14'-15' (ML) Silt
Red (2.5 YR 5/8), mica (≈40%), saprolite, cohesive, low plasticity
15'-16' (ML) Silt
Yellowish red (5YR 5/8), same as above
16'-17' (SM) Silty Sand
very pale brown (10YR 8/3), dry, cohesive, high plasticity
17'-19' (ML) Sandy Silt with Gravel
Yellowish red (5YR 5/8), fine-coarse grained sand, fine coarse gravel,
poorly sorted, well graded, low plasticity

19'-24' (CL) Clean Clay
Yellowish red (5YR 5/6), cohesive, medium plasticity, mica (30-40%)

24'-27' (ML) Silt
Pale brown (2.5Y 8/2), dry, non-cohesive, non-plastic

Core Photos

MATERIALS:

GROUT:	Bentonite Grout
MANUFACTURER:	AquaGuard
BENTONITE SEAL:	3/8" Bentonite Pellets
MANUFACTURER:	Pel-Plug
FILTER PACK SAND:	20/30 Mesh
MANUFACTURER:	Southern Products
WELL SCREEN:	Sch. 40 - 2" PVC
MANUFACTURER:	Campbell Monoflex
SLOT SIZE:	0.010-Inch Slot
WELL CASING:	Sch. 40 - 2" PVC
MANUFACTURER:	Campbell Monoflex

Soil Descriptions from Unified Soil Classification System

BTOC - Below Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

ATLANTIC COAST CONSULTING, INC.

YGWC-52

BORING ID

PROJECT:	Plant Yates	**PROJECT NO.:**	I054-110
TOTAL DEPTH:	79.05 ft. BTOC	**SITE LOCATION:**	Newnan, Georgia
DATE BEGIN:	27-May-2020	**DRILLER:**	Isaac Young
DATE COMPLETE:	28-May-2020	**RIG TYPE:**	T-300 Rotosonic
INSTALLED BY:	Cascade	**METHOD:**	Rotosonic
SUPERVISED BY:	Jordan Berisford		
WATER 1ST ENCOUNTERED:	NA		
WATER AFTER 48 HOURS:	35.67' BTOC		

Core Photos

Elevation MSL	Depth BGS	
	28	27'-29' (ML) Silt Same as above, dry, quartz (5-10%) angular, fine-coarse grain
	29	29'-34' (SM) Silty Sand Brown (7.5YR 5/4), dry, quartz (≈15%) angular, mica (≈35%),
	30	biotite (≈15%), non-cohesive, non-plastic, saprolite
	31	
	32	
	33	
	34	34'-39' (SM) Silt with Sand Light yellowish brown (10YR 6/4), cohesive, low plasticity, mica (≈20%)
	35	
	36	
	37	
	38	
	39	39'-45' (ML) Silt Very pale brown (10YR 7/3), dry, soft, cohesive, low plasticity
	40	
	41	
	42	
	43	
	44	
	45	45'-49' (ML) Silt Very pale brown (10YR 7/3), dry, soft, cohesive, low plasticity
	46	
	47	
	48	
	49	49'-53' (ML) Silt Pale brown (2.5Y 7/3), as above
	50	
	51	
	52	

6.00" OD

MATERIALS:

GROUT:	Bentonite Grout
MANUFACTURER:	AquaGuard
BENTONITE SEAL:	3/8" Bentonite Pellets
MANUFACTURER:	Pel-Plug
FILTER PACK SAND:	20/30 Mesh
MANUFACTURER:	Southern Products
WELL SCREEN:	Sch. 40 - 2" PVC
MANUFACTURER:	Silver-Line
SLOT SIZE:	0.010-Inch Slot
WELL CASING:	Sch. 40 - 2" PVC
MANUFACTURER:	Silver-Line

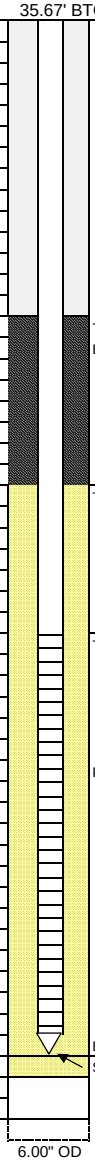
TOC - Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

ATLANTIC COAST CONSULTING, INC.

YGWC-52

BORING ID

PROJECT:	Plant Yates	**PROJECT NO.:**	I054-110
TOTAL DEPTH:	79.05 ft. BTOC	**SITE LOCATION:**	Newnan, Georgia
DATE BEGIN:	27-May-2020	**DRILLER:**	Issac Young
DATE COMPLETE:	28-May-2020	**RIG TYPE:**	T-300 Rotosonic
INSTALLED BY:	Cascade	**METHOD:**	Rotosonic
SUPERVISED BY:	Jordan Berisford		
WATER 1ST ENCOUNTERED:	NA		
WATER AFTER 48 HOURS:	35.67' BTOC		



53'-55' (SP) Poorly Graded Sand
Pale brown (2.5Y 7/3), non-plastic, non-cohesive, soft, well sorted

55'-59' (SP) Poorly Graded Sand
Pale brown (2.5Y 8/3), non-plastic, non-cohesive, soft, well sorted

59'-61' (ML) Sandy Silt with Gravel
Pale brown (2.5Y 8/3), low plasticity, cohesive

61'-63' (SW-SM) Well Graded Sand with Silt and Gravel
Non-plastic, non-cohesive, moderatly sorted, sub-angular gravel quartz
well graded

63'-69' fractured rock, gneiss with iron staining present

69'-77' fractured metamorphic pegmitite (Unakite) containing epidote, feldspar, and quartz

Boring Terminated at 77' BGS

MATERIALS:

GROUT:	Bentonite Grout
MANUFACTURER:	AquaGuard
BENTONITE SEAL:	3/8" Bentonite Pellets
MANUFACTURER:	Pel-Plug
FILTER PACK SAND:	20/30 Mesh
MANUFACTURER:	Southern Products
WELL SCREEN:	Sch. 40 - 2" PVC
MANUFACTURER:	Silver-Line
SLOT SIZE:	0.010-Inch Slot
WELL CASING:	Sch. 40 - 2" PVC
MANUFACTURER:	Silver-Line

TOC - Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

SOUTHERN COMPANY

LOG OF TEST BORING AND WELL INSTALLATION

BORING PZ-9S
PAGE 1 OF 2
ECS37976

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Yates Hydro-Geological Study
LOCATION Newnan, GA

DATE STARTED 5/2/2014 **COMPLETED** 5/19/2014 **SURF. ELEV.** 709.8 **COORDINATES:** N:1,262,003.49 E:2,070,720.43
CONTRACTOR Cascade Drilling **EQUIPMENT** PS-150 **METHOD** Rotosonic
DRILLED BY D. Wilcox **LOGGED BY** B. Smelser **CHECKED BY** **ANGLE** **BEARING**
BORING DEPTH 57 ft. **GROUND WATER DEPTH: DURING** **COMP.** 13.51 ft. **DELAYED**
NOTES Top of Casing Elevation = 712.08

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	WELL DATA	ELEV. (DEPTH)
				Surface: protective aluminum cover with bollards; 4-foot square concrete pad	
5		**Fill (FILL)** - reddish brown grading to dark reddish brown with black mottling @ 2' grading to rusty red @ 4', damp, medium stiff to stiff, low plasticity, very fine to lower fine grain, cohesive; micaceous; trace organics near surface		← Surface Seal: concrete	707.8 (2.0)
			702.8		
10		**Silt (ML)** - orangish brown with light brown/tan to rusty red mottling, damp, very stiff to stiff decreasing to medium stiff to soft, low plasticity, very fine to upper fine grain, cohesive; decreasing clay content with depth to a more silty sand with clay; increasing grain size with depth; micaceous			
		▼	695.8		
15		**Silty Sand (SM)** - rusty red with black mottling, damp, medium dense, no plasticity, lower fine to upper fine grain, cohesive; micaceous; thin layer of ~~interbedded/mottled, fine to medium sized with trace upper coarse to~~ fine gravel sized bottom ash	692.8		
20		**Poorly-graded Sand (SP)** - orangish brown, moist, medium dense to loose, no plasticity, lower medium to lower coarse grain, *alluvium*, noncohesive; rounded to subrounded grains; rounded gravel to cobble sized inclusions; possible alluvial sediments	687.3	← Annular Fill: 90/10 Portland Cement/Bentonite Powder	
25		**Silty Sand (SM)** - dark brown to orangish brown with rusty red to light gray to greenish gray mottling, moist, medium dense to loose, no plasticity, lower fine to lower medium grain, *saprolite*, cohesive; completely weathered to residual soil; subangular to subrounded grains; micaceous			
30		- SM: medium gray to light gray with white mottling, trace greenish gray to dark brown mottling, moist, medium dense, no plasticity, lower fine to lower medium grain, *saprolite*, noncohesive; completely weathered to resiudual soil; subangular to angular grains; micaceous			
35		- SM: light brown to orangish brown with light gray mottling, moist, medium dense to loose interbedded with zones of dense, no plasticity, upper fine to upper medium grain, *saprolite*, noncohesive; completely weathered to residual soil; quartz, muscovite, biotite identifiable; micaceous; angular to subangular grains			
40					667.8

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING AND WELL INSTALLATION

BORING PZ-9S
PAGE 2 OF 2
ECS37976

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Yates Hydro-Geological Study
LOCATION Newnan, GA

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	WELL DATA
				Surface: protective aluminum cover with bollards; 4-foot square concrete pad
				(CONTINUED) ELEV. (DEPTH)
45		**Silty Sand (SM)***(Con't)*		(42.0)
		- SM: light brown to orangish brown with interbedded zones of light gray, moist, medium dense to loose interbedded with zones of dense, no plasticity, upper fine to upper medium grain, *saprolite*, noncohesive; completely weathered to residual soil; remnant rock fabric visible in the light gray interbedded zones, @ approx. 45-47'; grain size in this zone increases to lower coarse to upper coarse; quartz, muscovite, biotite identifiable; micaceous		Annular Seal: 3/8 Hole Plug (medium bentonite chips)
				664.6 (45.2)
				Filter: 20/30 Silica Sand
				663.1 (46.7)
50				**Well: 2" OD PVC (SCH 40)**
				Screen: 10 ft; pre-pack
55		- SM: light gray, dry, loose, no plasticity, lower fine to upper medium grain, *saprolite*, noncohesive; completely weathered to residual soil; brittle/friable gravel sized rock fragments with thin (1-2") zones of rubble/broken rock; angular to subangular rock fragments; rock fragment becomes harder/more competent with depth	652.8	653.1
				Sump:0.30 ft. 652.8
		Bottom of borehole at 57.0 feet.		

SOUTHERN COMPANY

LOG OF TEST BORING AND WELL INSTALLATION

BORING PZ-9I
PAGE 1 OF 2
ECS37976

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Yates Hydro-Geological Study
LOCATION Newnan, GA

DATE STARTED 5/2/2014 **COMPLETED** 5/19/2014 **SURF. ELEV.** 709.8 **COORDINATES:** N:1,261,995.81 E:2,070,720.09
CONTRACTOR Cascade Drilling **EQUIPMENT** PS-150 **METHOD** Rotosonic
DRILLED BY D. Wilcox **LOGGED BY** B. Smelser **CHECKED BY** **ANGLE** **BEARING**
BORING DEPTH 77 ft. **GROUND WATER DEPTH: DURING** **COMP.** 13.6 ft. **DELAYED**
NOTES Top of Casing Elevation = 712.13

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	WELL DATA
				Surface: protective aluminum cover with bollards; 4-foot square concrete pad
				ELEV. (DEPTH)
		Fill (FILL) - reddish brown grading to dark reddish brown with black mottling @ 2' grading to rusty red @ 4', damp, medium stiff to stiff, low plasticity, very fine to lower fine grain, cohesive; micaceous; trace organics near surface		← Surface Seal: concrete
				707.8 (2.0)
5			702.8	
		Silt (ML) - orangish brown with light brown/tan to rusty red mottling, damp, very stiff to stiff decreasing to medium stiff to soft, low plasticity, very fine to upper fine grain, cohesive; decreasing clay content with depth to a more silty sand with clay; increasing grain size with depth; micaceous		
10				
		▼	695.8	
15		**Silty Sand (SM)** - rusty red with black mottling, damp, medium dense, no plasticity, lower fine to upper fine grain, cohesive; micaceous; thin layer of interbedded/mottled, fine to medium sized with trace upper coarse to fine gravel sized bottom ash	692.8	
		Poorly-graded Sand (SP) - orangish brown, moist, medium dense to loose, no plasticity, lower medium to lower coarse grain, *alluvium*, noncohesive; rounded to subrounded grains; rounded gravel to cobble sized inclusions; possible alluvial sediments		Annular Fill: 90/10 Portland Cement/Bentonite Powder
20			687.3	
		Silty Sand (SM) - dark brown to orangish brown with rusty red to light gray to greenish gray mottling, moist, medium dense to loose, no plasticity, lower fine to lower medium grain, *saprolite*, cohesive; completely weathered to residual soil; subangular to subrounded grains; micaceous		
25				
		- SM: medium gray to light gray with white mottling, trace greenish gray to dark brown mottling, moist, medium dense, no plasticity, lower fine to lower medium grain, *saprolite*, noncohesive; completely weathered to resiudual soil; subangular to angular grains; micaceous		←
30				
35		- SM: light brown to orangish brown with light gray mottling, moist, medium dense to loose interbedded with zones of dense, no plasticity, upper fine to upper medium grain, *saprolite*, noncohesive; completely weathered to residual soil; quartz, muscovite, biotite identifiable; micaceous; angular to subangular grains		
40				

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 7/9/14 14:47 - \\ALTRCFS02\X2DBSMEL$\GINT\PLANT YATES HYDRO-GEOLOGICAL STUDY.GPJ

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING AND WELL INSTALLATION

BORING PZ-9I
PAGE 2 OF 2
ECS37976

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Yates Hydro-Geological Study
LOCATION Newnan, GA

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	WELL DATA
				Surface: protective aluminum cover with bollards; 4-foot square concrete pad
				(CONTINUED) ELEV. (DEPTH)
45		**Silty Sand (SM)***(Con't)*		
		- SM: light brown to orangish brown with interbedded zones of light gray, moist, medium dense to loose interbedded with zones of dense, no plasticity, upper fine to upper medium grain, *saprolite*, noncohesive; completely weathered to residual soil; remnant rock fabric visible in the light gray interbedded zones, @ approx. 45-47'; grain size in this zone increases to lower coarse to upper coarse; quartz, muscovite, biotite identifiable; micaceous		Annular Fill: 90/10 Portland Cement/Bentonite Powder
50				
55		- SM: light gray, dry, loose, no plasticity, lower fine to upper medium grain, *saprolite*, noncohesive; completely weathered to residual soil; brittle/friable gravel sized rock fragments with thin (1-2") zones of rubble/broken rock; angular to subangular rock fragments; rock fragment becomes harder/more competent with depth		
60			650.3	
		Biotite Gneiss		648.3 (61.5)
		- brownish gray with orangish brown staining, lower fine to lower medium grain, medium hard to soft, moderately to highly weathered, banded, quartz, plagioclase, biotite, muscovite visible; some mineral decomposition visible; low to moderately angled fractures; no visible healing/fracture fill		Annular Seal: 3/8 Hole Plug (medium bentonite chips)
65				644.7 (65.1)
				Filter: 20/30 Silica Sand
				643.1 (66.7)
70		- Biotite Gneiss grading to Granitic Gneiss: light gray to white, some orangish staining, lower fine to lower medium grain, medium hard, slightly to moderately weathered, banded, quartz, plagioclase, biotite, muscovite, trace chlorite, trace garnet, hornblende; moderately angled fractures visible; total to moderate fracture healing; quartz fracture fill (1-2 mm to 6-8 mm thick); highly fractured/rubble zone @ approx. 70-72'; thin zones of highly weathered rock visible		**Well: 2" OD PVC (SCH 40)**
				Screen: 10 ft; pre-pack
75			632.8	633.1
				Sump:0.30 ft. 632.8

Bottom of borehole at 77.0 feet.

BORING PZ-10S
PAGE 1 OF 1
ECS37976

LOG OF TEST BORING AND WELL INSTALLATION

SOUTHERN COMPANY

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Yates Hydro-Geological Study
LOCATION Newnan, GA

DATE STARTED 4/17/2014 **COMPLETED** 5/19/2014 **SURF. ELEV.** 698.1 **COORDINATES:** N: 1,260,802.29 E: 2,070,552.32
CONTRACTOR Cascade Drilling **EQUIPMENT** PS-150 **METHOD** Rotosonic
DRILLED BY D. Wilcox **LOGGED BY** B. Smelser **CHECKED BY** **ANGLE** **BEARING**
BORING DEPTH 16.3 ft. **GROUND WATER DEPTH: DURING** **COMP.** 4.1 ft. **DELAYED**
NOTES Top of Casing Elevation = 700.43

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.
		Clayey Sand (SC) - reddish brown, damp, medium dense, low to no plasticity, lower fine to upper fine grain, cohesive; micaceous; trace organics near surface	
			694.1
5		**Silty Sand (SM)** - reddish brown, dry, medium dense to loose, no plasticity, lower fine to upper fine grain, cohesive; micaceous; subangular to subrounded grains	
10		- SM: dark brown, damp, medium dense, no plasticity, lower fine to upper fine grain, cohesive; micaceous; subangular grains	
15		- SM: dark brown, damp, medium dense, no plasticity, lower fine to upper fine grain, cohesive; micaceous; subangular grains	
			681.8

Bottom of borehole at 16.3 feet.

WELL DATA

Surface:
protective aluminum cover with bollards; 4-foot square concrete pad

ELEV. (DEPTH)

- Surface Seal: concrete — 696.1 (2.0)
- Annular Seal: 3/8 Hole Plug (medium bentonite chips) — 693.6 (4.5)
- Filter: 20/30 Silica Sand — 692.1 (6.0)
- **Well: 2" OD PVC (SCH 40)**
- Screen: 10 ft; pre-pack
- 682.1
- Sump:0.30 ft. — 681.8

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 6/23/14 13:45 - \\ALTRCFS02\X2DBSMEL$\GINT\PLANT YATES HYDRO-GEOLOGICAL STUDY.GPJ

BORING PZ-10I
PAGE 1 OF 2
ECS37976

SOUTHERN COMPANY

LOG OF TEST BORING AND WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Yates Hydro-Geological Study
LOCATION Newnan, GA

DATE STARTED 4/17/2014 **COMPLETED** 5/19/2014 **SURF. ELEV.** 697.8 **COORDINATES:** N: 1,260,809.64 E: 2,070,551.98
CONTRACTOR Cascade Drilling **EQUIPMENT** PS-150 **METHOD** Rotosonic
DRILLED BY D. Wilcox **LOGGED BY** B. Smelser **CHECKED BY** **ANGLE** **BEARING**
BORING DEPTH 46.5 ft. **GROUND WATER DEPTH: DURING** **COMP.** 10.26 ft. **DELAYED**
NOTES Top of Casing Elevation = 700.25 ~~700.25~~

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	WELL DATA	ELEV. (DEPTH)
		Clayey Sand (SC) - reddish brown, damp, medium dense, low to no plasticity, lower fine to upper fine grain, cohesive; micaceous; trace organics near surface		Surface: protective aluminum cover with bollards; 4-foot square concrete pad ←Surface Seal: concrete	695.8 (2.0)
			693.8		
5		**Silty Sand (SM)** - reddish brown, dry, medium dense to loose, no plasticity, lower fine to upper fine grain, cohesive; micaceous; subangular to subrounded grains			
		- SM: dark brown, damp, medium dense, no plasticity, lower fine to upper fine grain, cohesive; micaceous; subangular grains			
10		▼			
		- SM: dark brown, damp, medium dense, no plasticity, lower fine to upper fine grain, cohesive; micaceous; subangular grains		Annular Fill: 90/10 Portland Cement/Bentonite Powder	
15			681.8	←	
		Interlayered/Alternating Biotite Gneiss and Mica Schist - light gray, lower fine to upper fine grain, hard, not weathered, banded, quartz, plagioclase, biotite, muscovite, hornblende; low to moderately angled fractures; no visible healing/fracture fill; distinct contact between silty sand (above) and biotite gneiss (below); no apparent weathering zone i.e. no visible saprolite			
20		- Interlayered/Alternating Biotite Gneiss and Mica Schist: light gray to dark gray (gneiss) to dark greenish gray (schist), lower fine to upper fine grain, medium hard, not to slightly weathered, banded, slight schistose foliation, quartz, plagioclase, biotite, muscovite, hornblende, trace chlorite, trace pyrite; grading from predominately gneiss towards the top to predominately schist with depth; moderate to high angle fracturing; fracturing appears to take place along schistose foliations; no visible healing/fracture fill			
25					

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING AND WELL INSTALLATION

BORING PZ-10I
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ECS37976

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Yates Hydro-Geological Study
LOCATION Newnan, GA

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	WELL DATA
				Surface: protective aluminum cover with bollards; 4-foot square concrete pad
				(CONTINUED) ELEV. (DEPTH)
		Interlayered/Alternating Biotite Gneiss and Mica Schist *(Con't)*		
		- Interlayered/Alternating Biotite Gneiss and Mica Schist: light gray to dark gray (gneiss) to dark greenish gray (schist), lower fine to upper fine grain, medium hard, not to slightly weathered, banded, slight schistose foliation, quartz, plagioclase, biotite, muscovite, hornblende, pyrite, trace chlorite; low to moderately angled fracturing; majority of fractures along schistose foliated planes; some healing with quartz and pyrite fracture fill; trace high angle mechanical fractures		Annular Fill: 90/10 Portland Cement/Bentonite Powder
30				667.1 (30.7)
				Annular Seal: 3/8 Hole Plug (medium bentonite chips)
35				663.3 (34.5)
				Filter: 20/30 Silica Sand
				661.6 (36.2)
		- Biotite Gneiss: medium gray to light gray, lower fine to upper medium grain, medium hard to hard, not to slightly weathered, banded, slight schistose foliation, quartz, plagioclase, biotite, muscovite, hornblende, pyrite, trace chlorite; predominately composed of felsic/siliceous minerals; decrease in interlayered mica schist; moderate to high angled fractures; total healing; quartz, pyrite, mica fracture fill @ approx. 45.5'; some visible staining around some fractures		**Well: 2" OD PVC (SCH 40)**
40				Screen: 10 ft; pre-pack
45			651.3	651.6 Sump:0.30 ft. 651.3
		Bottom of borehole at 46.5 feet.		

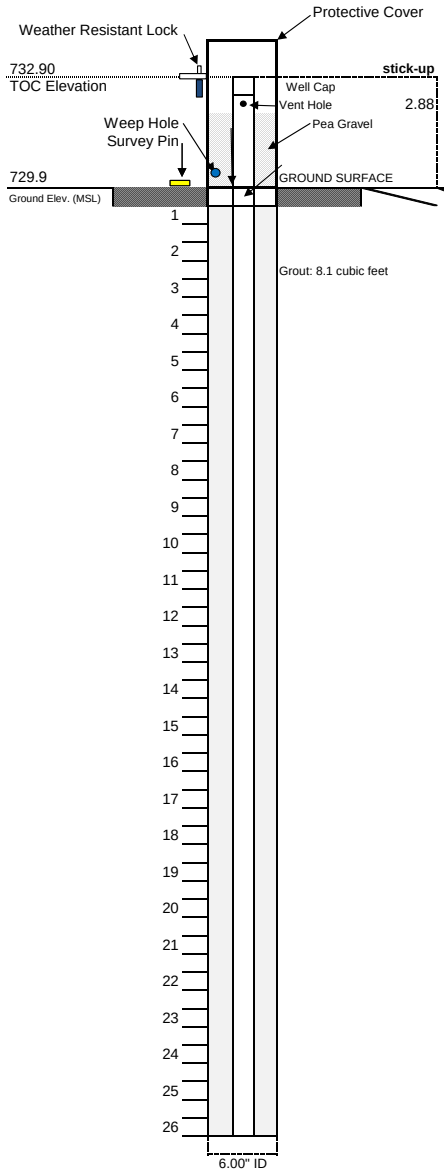
ATLANTIC COAST CONSULTING, INC.

PZ-53/YAMW-6

BORING ID

ATLANTIC COAST CONSULTING, INC.

PROJECT:	Plant Yates	**PROJECT NO.:**	I054-110
TOTAL DEPTH:	71.89 ft. BTOC	**SITE LOCATION:**	Newnan, Georgia
DATE BEGIN:	13-Nov-2019	**DRILLER:**	Jamie Everson
DATE COMPLETE:	18-Nov-2019	**RIG TYPE:**	T-300 Rotosonic
INSTALLED BY:	Cascade	**METHOD:**	Rotosonic
SUPERVISED BY:	Taylor Goble		
WATER 1ST ENCOUNTERED:	40' BGS		
WATER AFTER 48 HOURS:	35.74' BGS		



Northing: 1260964.50
Easting: 2070920.38

SURFACE COMPLETION:
4"x4" Aluminum Protective Casing
4'x4'x4" Concrete Pad
Weather Resistant Lock
Survey Pin

SOIL DESCRIPTION

0-10' Hydrovac. No observable cuttings

10-15' White silty sand, dry, soft, well sorted, micaceous, and fine grained

15-20' As above except more silt content around 18' and rare brown mottling

20-25' Brittle white micaceous, strong cleavage, friable, dry

25-30' Color change to light brown. Continuation of friable and micaceous. Rock pieces present, quartz rich and brittle with larger rock pieces present at 28'. Dry

Core Photos

MATERIALS:

GROUT:	Bentonite Grout
MANUFACTURER:	AquaGuard
BENTONITE SEAL:	3/8" Bentonite Pellets
MANUFACTURER:	Pel-Plug
FILTER PACK SAND:	20/30 Mesh
MANUFACTURER:	Filter Media
WELL SCREEN:	Sch. 40 - 2" PVC
MANUFACTURER:	Campbell Monoflex
SLOT SIZE:	0.010-Inch Slot
WELL CASING:	Sch. 40 - 2" PVC
MANUFACTURER:	Campbell Monoflex

Soil Descriptions from Unified Soil Classification System

BTOC - Below Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

ATLANTIC COAST CONSULTING, INC.

PZ-53/YAMW-6
BORING ID

PROJECT:	Plant Yates	**PROJECT NO.:**	I054-110
TOTAL DEPTH:	71.89 ft. BTOC	**SITE LOCATION:**	Newnan, Georgia
DATE BEGIN:	13-Nov-2019	**DRILLER:**	Jamie Everson
DATE COMPLETE:	18-Nov-2019	**RIG TYPE:**	T-300 Rotosonic
INSTALLED BY:	Cascade	**METHOD:**	Rotosonic
SUPERVISED BY:	Taylor Goble		
WATER 1ST ENCOUNTERED:	40' BGS		
WATER AFTER 48 HOURS:	35.74' BGS		

Elevation MSL	Depth BGS	
	28	
	29	
	30	30-35' As above
	31	
	32	
	33	
	34	
	35	35-40' Color change to white silty sand. Larger rock pieces that are no longer friable or micaceous. Dry. Many rock pieces around 1-2 inch in size
	36	
	37	
	38	
	39	Bedrock at 39'
	40	40-45' Gneiss/schist rock. Iron staining present
	41	
	42	
	43	
	44	
	45	45-50' As above
	46	
	47	
	48	
681.14	48.71	Top of Bentonite Seal
	50	Bentonite Seal: 0.33 cubic feet
		50-55' Gneiss/schist rock. Well fractured, iron staining present. Trace pyrite inclusions present
679.14	50.71	Top of Filter Pack
	52	Filter Pack: 2.0 cubic feet

6.00" OD

MATERIALS:

GROUT:	Bentonite Grout
MANUFACTURER:	AquaGuard
BENTONITE SEAL:	3/8" Bentonite Pellets
MANUFACTURER:	Pel-Plug
FILTER PACK SAND:	20/30 Mesh
MANUFACTURER:	Filter Media
WELL SCREEN:	Sch. 40 - 2" PVC
MANUFACTURER:	Silver-Line
SLOT SIZE:	0.010-Inch Slot
WELL CASING:	Sch. 40 - 2" PVC
MANUFACTURER:	Silver-Line

TOC - Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

ATLANTIC COAST CONSULTING, INC.

PZ-53/YAMW-6
BORING ID

PROJECT:	Plant Yates	**PROJECT NO.:**	I054-110
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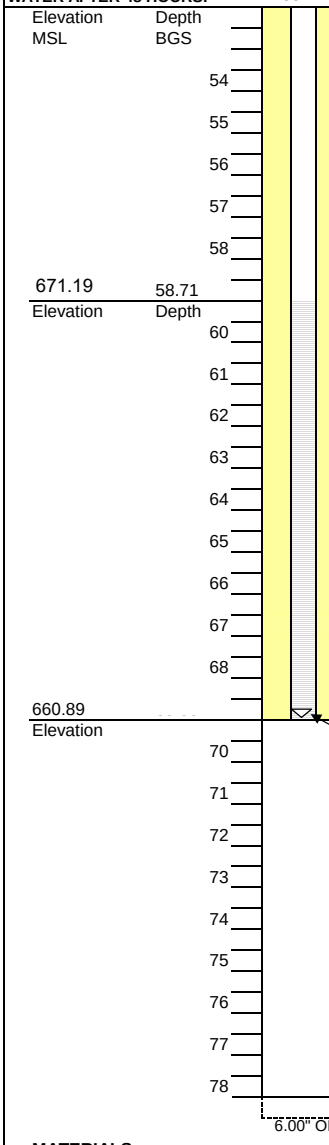
WATER 1ST ENCOUNTERED:	40' BGS		
WATER AFTER 48 HOURS:	35.74' BGS		



55-60' As above

60-65' As above except minimal fractures present

65-69' Iron staining present, gneiss/schist, well fractured

Total well depth 69.01' BGS

MATERIALS:

GROUT:	Bentonite Grout
MANUFACTURER:	AquaGuard
BENTONITE SEAL:	3/8" Bentonite Pellets
MANUFACTURER:	Pel-Plug
FILTER PACK SAND:	20/30 Mesh
MANUFACTURER:	Filter Media
WELL SCREEN:	Sch. 40 - 2" PVC
MANUFACTURER:	Silver-Line
SLOT SIZE:	0.010-Inch Slot
WELL CASING:	Sch. 40 - 2" PVC
MANUFACTURER:	Silver-Line

TOC - Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

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.

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**

This certificate extends the life of the bond to June 30, 2017. It is executed upon the express condition that the surety's liability under said bond, together with this and all previous continuation certificates, shall not be cumulative and shall in no event exceed the amount specifically set forth in said bond or any existing certificate changing the amount of said bond.

Signed, sealed and dated this 26th day of May , 2015 .

Westchester Fire Insurance Company

By: Katie J

Katie Snider, Attorney-in-Fact

Surety of Record: Westchester Fire Insurance Company
436 Walnut Street
Philadelphia, PA 19106
Phone: (415) 547-4513

Agent of Record: Kibble & Prentice, a USI Company
601 Union Street, Suite 1000
Seattle, WA 98101
Phone: (206) 441-6300

Power of Attorney

WESTCHESTER FIRE INSURANCE COMPANY

Know all men by these presents: That **WESTCHESTER FIRE INSURANCE COMPANY,** a corporation of the Commonwealth of Pennsylvania pursuant to the following Resolution, adopted by the Board of Directors of the said Company on December 11, 2006, to wit:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into the ordinary course of business (each a "Written Commitment"):

(1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.

(2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such persons written appointment as such attorney-in-fact.

(3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.

(4) Each of the Chairman, the President and Vice Presidents of the Company in hereby authorized, for and on behalf of the Company, to delegate in writing any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company's seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.

(5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested.

Does hereby nominate, constitute and appoint Heather Allen, Holly E Ulfers, Katie Snider, Nancy N Hill, Roxana Palacios, Steven W Palmer, all of the City of SEATTLE, Washington, each individually if there be more than one named, its true and lawful attorney-in-fact, to make, execute, seal and deliver on its behalf, and as its act and deed any and all bonds, undertakings, recognizances, contracts and other writings in the nature thereof in penalties not exceeding Fifteen million dollars & zero cents ($15,000,000.00) and the execution of such writings in pursuance of these presents shall be as binding upon said Company, as fully and amply as if they had been duly executed and acknowledged by the regularly elected officers of the Company at its principal office,

IN WITNESS WHEREOF, the said Stephen M. Haney, Vice-President, has hereunto subscribed his name and affixed the Corporate seal of the said **WESTCHESTER FIRE INSURANCE COMPANY** this 22 day of December 2014.

WESTCHESTER FIRE INSURANCE COMPANY

Stephen M. Haney

Stephen M. Haney, Vice President

COMMONWEALTH OF PENNSYLVANIA
COUNTY OF PHILADELPHIA ss.

On this 22 day of December, AD. 2014 before me, a Notary Public of the Commonwealth of Pennsylvania in and for the County of Philadelphia came Stephen M. Haney, Vice-President of the **WESTCHESTER FIRE INSURANCE COMPANY** to me personally known to be the individual and officer who executed the preceding instrument, and he acknowledged that he executed the same, and that the seal affixed to the preceding instrument is the corporate seal of said Company; that the said corporate seal and his signature were duly affixed by the authority and direction of the said corporation, and that Resolution, adopted by the Board of Directors of said Company, referred to in the preceding instrument, is now in force.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal at the City of Philadelphia the day and year first above written.

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
KAREN E. BRANDT, Notary Public
City of Philadelphia, Phila. County
My Commission Expires Sept. 26, 2018

Karen E. Brandt

Notary Public

I, the undersigned Assistant Secretary of the **WESTCHESTER FIRE INSURANCE COMPANY,** do hereby certify that the original POWER OF ATTORNEY, of which the foregoing is a substantially true and correct copy, is in full force and effect.

In witness whereof, I have hereunto subscribed my name as Assistant Secretary, and affixed the corporate seal of the Corporation, this 26th day of May, 2015.

William L. Kelly

William L. Kelly, Assistant Secretary

THIS POWER OF ATTORNEY MAY NOT BE USED TO EXECUTE ANY BOND WITH AN INCEPTION DATE AFTER December 22, 2016.

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)

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.

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

ARCADIS Design & Consultancy for natural and built assets

Arcadis U.S., Inc.
1210 Premier Drive
Suite 200
Chattanooga
Tennessee 37421
Tel 423 756 7193
Fax 423 756 7197
www.arcadis-us.com

Mr. Joju Abraham
Southern Company
Environmental Solutions
241 Ralph McGill Blvd, NE
Atlanta, Georgia 30308

Subject:
Monitoring Well and Piezometer Surveys
Plant Yates, 708 Dyer Road, Newnan, Georgia

Date:
June 29, 2020

Contact:
Cory Williams, PLS

Phone:
919.415.2348

Email:
cory.williams@arcadis.com

Our ref:
30054533

Dear Mr. Abraham:

Attached is a copy of the reports for the Monitoring Well and Piezometer Surveys for the Phase I and Phase II Sites at Plant Yates. The Phase I and Phase II sites surveyed include the following specific areas:

- AMA, Ash Management Area
- AP-1, Former Ash Pond 1
- AP-2, Ash Pond 2
- Gypsum Landfill

We appreciate the opportunity to work with Georgia Power and look forward to working with you in the future. If you need additional information, please feel free to contact me.

Sincerely,

Arcadis U.S., Inc.

A. Cory Williams, PLS
Survey Department Manager

Attachments

Copies:
Geoffrey Gay, PE
Rick Helmadollar, PE
A. Lee Robertson IV, PLS

DESCRIPTION AND SCOPE

The task included performing horizontal and vertical field survey locations of the existing well networks (including all monitoring wells and piezometers). The Arcadis field survey team obtained horizontal and vertical locations for the top of the well casing (TOC) and surveyed the nail located on the concrete pad around the well. Where no nail was present, the field crew surveyed the top of the concrete well pad. The Arcadis field team utilized a combination of Leica GS16 Global Positioning System (GPS) with traditional Leica MS60 Robotic Total Station field survey equipment and methods to obtain horizontal locations of the TOC and/or nail or top of the concrete well pad. All horizontal field survey locations are relative to the Georgia State Plane Coordinate System, West Zone, NAD1983, US Survey Feet. All horizontal locations meet or exceed an accuracy level of 0.50 foot. All vertical field survey locations were obtained from a level loop, performed with the Leica DNA03 digital level. Next, we began from a benchmark set, by utilizing GPS Static Session with an OPUS solution and subsequently verified via the eGPS RTN Network and ran through all well and piezometer locations to close on the beginning benchmark to confirm accuracy. All vertical elevations are referenced to NAVD1988, US Survey Feet and meet an accuracy standard of 0.01 foot.

See the attached exhibits detailing the Monitoring Well and Piezometer surveyed locations for each Phase I and Phase II site.

SUMMARY

The field survey crew performed the survey in June 2020 with the findings or observations summarized below:

- The ground elevation survey location was taken adjacent to the concrete base point (PK, Disk or Chiseled X). Note that at some locations, the concrete base was buried under soil; consequently, the ground elevation is higher than the concrete base point location.

- The horizontal location for monitoring well GWC-6R at the Gypsum Landfill is approximately +/-51 feet southeasterly of the provided coordinate location as detailed in "Georgia Power Company Plant Yates, Private Industrial Landfill, Permit No. 038-014D (I), Replacement Monitoring Well GWC-6R Certification, ES1703", dated July 2010. See attached Photograph Log.

Monitoring Well Summary

Site	Monitoring Wells	Piezometers
AMA = Ash Management Area	25	8
AP-1 = Former Ash Pond 1	5	5
AP-2 = Ash Pond 2	14	8
Gypsum Landfill	7	0

CERTIFICATION

I, A. Lee Robertson IV, being a Georgia Licensed Professional Land Surveyor, in accordance with the Georgia Board of Professional Engineers and Land Surveyors do hereby certify that the information contained herein is true and correct and has been prepared in accordance with generally accepted good land survey practices under my supervision, and the data is reliable to a horizontal accuracy of 0.5 foot and an elevational accuracy of 0.01 foot for each surveyed point.

FINAL REVIEW:

A. Lee Robertson IV DATE: June 29, 2020

Digitally signed by A Lee Robertson IV
Reason: Revised Yates
Date: 2020.08.06 09:22:42 -04'00'

A. Lee Robertson IV, ARM, PLS, PSM
1301 Riverplace Blvd., Suite 700
Jacksonville, FL 32207
904.493.8589

EXHIBIT 1

Plant Yates – AMA Monitoring Well and Piezometer Surveys

Monument	Concrete Base Point	NAVD88 Elevation	Georgia State Plane Grid (NAD83), West Zone		WGS84 Latitude	Longitude
			Northing	Easting		
YGWA-4I	Casing	784.21	1254436.68	2075455.62	33° 26' 47.432" N	84° 53' 29.831" W
	Disk	782.00	1254436.75	2075456.65		
	Ground	781.9				
YGWA-5I	Casing	784.54	1254399.95	2076218.86	33° 26' 47.122" N	84° 53' 20.821" W
	Disk	782.21	1254400.71	2076219.39		
	Ground	782.1				
YGWA-5D	Casing	784.53	1254396.67	2076223.63	33° 26' 47.089" N	84° 53' 20.764" W
	Disk	782.16	1254397.45	2076224.30		
	Ground	781.9				
YGWA-17S	Casing	783.05	1257602.79	2076758.31	33° 27' 18.846" N	84° 53' 14.717" W
	PK Nail	780.14	1257603.70	2076758.38		
	Ground	780.2				
YGWA-18S	Casing	790.57	1257116.05	2077015.25	33° 27' 14.048" N	84° 53' 11.644" W
	PK Nail	787.69	1257116.98	2077015.60		
	Ground	787.6				
YGWA-18I	Casing	790.57	1257090.05	2077015.82	33° 27' 13.791" N	84° 53' 11.635" W
	PK Nail	787.90	1257094.38	2077023.55		
	Ground	787.9				
YGWA-20S	Casing	767.12	1255531.55	2077410.37	33° 26' 58.399" N	84° 53' 06.851" W
	PK Nail	764.41	1255531.12	2077409.22		
	Ground	764.6				
YGWA-21I	Casing	783.70	1255538.27	2076768.14	33° 26' 58.421" N	84° 53' 14.432" W
	PK Nail	780.62	1255537.44	2076768.81		
	Ground	780.8				
YGWC-23S	Casing	764.91	1256366.93	2074734.07	33° 27' 06.479" N	84° 53' 38.506" W
	PK Nail	761.74	1256367.40	2074734.44		
	Ground	762.0				
YGWC-24SA	Casing	765.00	1258907.98	2073924.81	33° 27' 31.563" N	84° 53' 48.268" W
	PK Nail	762.08	1258909.02	2073924.05		
	Ground	762.0				
YGWC-36	Casing	739.61	1258514.02	2073770.14	33° 27' 27.654" N	84° 53' 50.061" W
	PK Nail	737.04	1258513.74	2073771.01		
	Ground	736.9				
YGWC-49	Casing	782.73	1259375.23	2074337.51	33° 27' 36.214" N	84° 53' 43.435" W
	PK Nail	780.11	1259375.91	2074337.14		
	Ground	780.1				

EXHIBIT 1

Plant Yates – AMA Monitoring Well and Piezometer Surveys

Monument	Concrete Base Point	NAVD88 Elevation	Georgia State Plane Grid (NAD83), West Zone		WGS84 Latitude	Longitude
			Northing	Easting		
YGWA-6S	Casing	782.47	1260484.87	2074786.49	33° 27' 47.223" N	84° 53' 38.227" W
	Disk	780.06	1260485.50	2074785.70		
	Ground	779.8				
YGWA-6I	Casing	782.73	1260490.02	2074790.49	33° 27' 47.275" N	84° 53' 38.181" W
	Disk	780.36	1260490.74	2074789.66		
	Ground	780.2				
YAMW-1	Casing	743.83	1258602.12	2073814.55	33° 27' 28.529" N	84° 53' 49.543" W
	PK Nail	741.11	1258602.93	2073815.29		
	Ground	740.9				
PZ-04S	Casing	784.25	1254442.86	2075454.20	33° 26' 47.493" N	84° 53' 29.848" W
	Disk	781.94	1254443.16	2075455.15		
	Ground	781.8				
PZ-05S	Casing	784.64	1254404.42	2076211.43	33° 26' 47.165" N	84° 53' 20.909" W
	Disk	782.31	1254405.12	2076212.12		
	Ground	782.2				
PZ-06D	Casing	782.02	1260480.15	2074782.68	33° 27' 47.176" N	84° 53' 38.272" W
	Disk	779.65	1260480.84	2074782.04		
	Ground	779.5				
PZ-24IA	Casing	764.65	1258910.76	2073930.07	33° 27' 31.591" N	84° 53' 48.206" W
	PK Nail	761.89	1258911.68	2073929.64		
	Ground	761.8				
PZ-35	Casing	743.81	1258593.16	2073805.60	33° 27' 28.440" N	84° 53' 49.649" W
	PK Nail	741.09	1258593.85	2073806.06		
	Ground	740.9				
PZ-48	Casing	779.83	1259868.04	2074528.00	33° 27' 41.103" N	84° 53' 41.228" W
	PK Nail	777.29	1259868.75	2074527.27		
	Ground	777.2				
YGWA-39	Casing	818.19	1255717.13	2073865.58	33° 26' 59.990" N	84° 53' 48.702" W
	PK Nail	815.58	1255717.96	2073865.39		
	Ground	815.6				
YGWA-40	Casing	815.73	1255791.95	2073431.34	33° 27' 00.700" N	84° 53' 53.833" W
	PK Nail	813.45	1255792.83	2073431.58		
	Ground	813.5				

EXHIBIT 1

Plant Yates – AMA Monitoring Well and Piezometer Surveys

Monument	Concrete Base Point	NAVD88 Elevation	Georgia State Plane Grid (NAD83), West Zone		WGS84 Latitude	Longitude
			Northing	Easting		
YGWC-38	Casing	799.69	1256108.38	2074446.80	33° 27' 03.901" N	84° 53' 41.875" W
	PK Nail	797.24	1256108.41	2074446.02		
	Ground	797.1				
YGWC-41	Casing	803.92	1256510.62	2073274.41	33° 27' 07.799" N	84° 53' 55.745" W
	PK Nail	801.23	1256509.74	2073274.29		
	Ground	801.1				
YGWC-42	Casing	797.86	1256882.87	2073326.52	33° 27' 11.486" N	84° 53' 55.161" W
	PK Nail	795.34	1256881.68	2073326.58		
	Ground	795.1				
YGWC-43	Casing	744.96	1257547.41	2073199.65	33° 27' 18.052" N	84° 53' 56.714" W
	PK Nail	742.50	1257546.78	2073200.55		
	Ground	742.3				
PZ-37	Casing	760.78	1256471.14	2074699.59	33° 27' 07.508" N	84° 53' 38.922" W
	PK Nail	758.10	1256471.89	2074700.06		
	Ground	758.0				
PZ-51	Casing	744.30	1257595.80	2073182.55	33° 27' 18.529" N	84° 53' 56.920" W
	PK Nail	741.23	1257595.53	2073181.53		
	Ground	741.3				
YAMW-2	Casing	781.04	1256780.59	2072924.89	33° 27' 10.446" N	84° 53' 59.893" W
	PK Nail	777.81	1256781.38	2072926.79		
	Ground	777.9				
YAMW-3	Casing	796.05	1256915.25	2073345.21	33° 27' 11.808" N	84° 53' 54.943" W
	PK Nail	792.98	1256914.96	2073344.24		
	Ground	793.2				
YAMW-4	Casing	805.59	1256532.64	2073280.71	33° 27' 08.018" N	84° 53' 55.673" W
	PK Nail	802.60	1256532.72	2073281.78		
	Ground	802.6				
YAMW-5	Casing	788.90	1256140.21	2074486.69	33° 27' 04.219" N	84° 53' 41.407" W
	PK Nail	785.87	1256139.54	2074487.44		
	Ground	785.9				

Notes:
NAD83(2011) coordinates established by utilizing eGPS VRS & OPUS Solutions
Elevations derived from Arcadis BM#1 (El. 758.24)
Elevations & coordinates are U.S. Survey feet

EXHIBIT 2

Plant Yates – AP-1 Monitoring Well and Piezometer Surveys

Monument	Concrete Base Point	NAVD88 Elevation	Georgia State Plane Grid (NAD83), West Zone		WGS84 Latitude	Longitude
			Northing	Easting		
YGWA-47	Casing	758.22	1262411.84	2071818.05	33° 28' 06.081" N	84° 54' 13.428" W
	PK Nail	755.73	1262410.74	2071817.99		
	Ground	755.6				
YGWC-44	Casing	758.35	1261874.34	2071219.39	33° 28' 00.721" N	84° 54' 20.449" W
	PK Nail	755.7	1261874.44	2071218.47		
	Ground	755.5				
YGWC-45	Casing	719.36	1261668.95	2070912.60	33° 27' 58.667" N	84° 54' 24.053" W
	PK Nail	716.72	1261668.87	2070911.87		
	Ground	716.5				
YGWC-52	Casing	755.86	1262145.22	2071464.36	33° 28' 03.418" N	84° 54' 17.580" W
	PK Nail	752.99	1262144.65	2071465.21		
	Ground	752.9				
YGWC-46A	Casing	733.04	1260994.59	2070970.30	33° 27' 52.000" N	84° 54' 23.316" W
	PK Nail	730.16	1260994.40	2070971.40		
	Ground	730.1				
PZ-09S	Casing	712.08	1262003.49	2070720.43	33° 28' 01.963" N	84° 54' 26.350" W
	Disk	709.90	1262003.23	2070721.54		
	Ground	709.8				
PZ-09I	Casing	712.13	1261995.81	2070720.09	33° 28' 01.887" N	84° 54' 26.353" W
	Disk	709.92	1261995.51	2070721.11		
	Ground	709.8				
PZ-10S	Casing	700.43	1260802.29	2070552.32	33° 27' 50.068" N	84° 54' 28.233" W
	Disk	698.02	1260802.21	2070553.31		
	Ground	698.1				
PZ-10I	Casing	700.25	1260809.64	2070551.98	33° 27' 50.068" N	84° 54' 28.233" W
	Disk	697.96	1260809.55	2070552.97		
	Ground	697.8				
PZ-53	Casing	732.90	1260964.50	2070920.38	33° 27' 51.698" N	84° 54' 23.902" W
	PK Nail	729.99	1260964.35	2070921.22		
	Ground	729.9				

Notes:
NAD83(2011) coordinates established by utilizing eGPS VRS & OPUS Solutions
Elevations derived from Arcadis BM#1 (El. 758.24)
Elevations & coordinates are U.S. Survey feet

EXHIBIT 3

Plant Yates – AP-2 Monitoring Well and Piezometer Surveys

Monument	Concrete Base Point	NAVD88 Elevation	Georgia State Plane Grid (NAD83), West Zone		WGS84 Latitude	Longitude
			Northing	Easting		
YGWA-1I	Casing	836.60	1256876.13	2070097.91	33° 27' 11.193" N	84° 54' 33.266" W
	Disk	834.33	1256876.76	2070098.84		
	Ground	834.3				
YGWA-1D	Casing	837.25	1256867.34	2070104.61	33° 27' 11.106" N	84° 54' 33.186" W
	Disk	835.04	1256868.01	2070105.52		
	Ground	834.9				
YGWA-2I	Casing	866.25	1256144.08	2070790.49	33° 27' 03.999" N	84° 54' 25.030" W
	Disk	864.2	1256144.35	2070791.29		
	Ground	864.0				
YGWA-3I	Casing	796.55	1256405.20	2072024.20	33° 27' 06.669" N	84° 54' 10.492" W
	Disk	794.34	1256405.65	2072025.23		
	Ground	794.0				
YGWA-3D	Casing	796.78	1256399.94	2072026.21	33° 27' 06.617" N	84° 54' 10.468" W
	Disk	794.39	1256400.26	2072027.12		
	Ground	794.1				
YGWA-14S	Casing	748.76	1257828.64	2072537.24	33° 27' 20.788" N	84° 54' 04.555" W
	Disk	746.58	1257829.68	2072537.61		
	Ground	746.8				
YGWA-30I	Casing	762.58	1258421.86	2071107.11	33° 27' 26.556" N	84° 54' 21.485" W
	PK Nail	759.95	1258421.69	2071106.13		
	Ground	760.1				
YGWC-26S	Casing	716.28	1259734.66	2070615.87	33° 27' 39.510" N	84° 54' 27.393" W
	PK Nail	713.17	1259734.57	2070614.87		
	Ground	713.1				
YGWC-26I	Casing	715.91	1259725.79	2070613.56	33° 27' 39.422" N	84° 54' 27.420" W
	PK Nail	713.21	1259725.80	2070612.71		
	Ground	713.1				
YGWC-27S	Casing	716.52	1259417.12	2070454.17	33° 27' 36.357" N	84° 54' 29.275" W
	PK Nail	713.27	1259416.33	2070454.96		
	Ground	713.0				
YGWC-27I	Casing	716.19	1259423.73	2070460.89	33° 27' 36.423" N	84° 54' 29.196" W
	PK Nail	713.35	1259423.32	2070461.64		
	Ground	713.2				
YGWC-28S	Casing	717.95	1259218.37	2070322.23	33° 27' 34.381" N	84° 54' 30.816" W
	PK Nail	715.09	1259217.72	2070323.07		
	Ground	715.0				

EXHIBIT 3

Plant Yates – AP-2 Monitoring Well and Piezometer Surveys

Monument	Concrete Base Point	NAVD88 Elevation	Georgia State Plane Grid (NAD83), West Zone		WGS84 Latitude	Longitude
			Northing	Easting		
YGWC-28I	Casing	717.93	1259226.47	2070328.27	33° 27' 34.462" N	84° 54' 30.745" W
	PK Nail	715.06	1259225.93	2070329.06		
	Ground	715.0				
YGWC-29I	Casing	717.39	1258974.06	2070203.26	33° 27' 31.956" N	84° 54' 32.199" W
	PK Nail	714.94	1258973.51	2070203.93		
	Ground	714.8				
PZ-01S	Casing	836.84	1256871.97	2070101.24	33° 27' 11.152" N	84° 54' 33.226" W
	Disk	834.73	1256874.29	2070101.35		
	Ground	834.5				
PZ-03S	Casing	796.39	1256410.86	2072021.63	33° 27' 06.725" N	84° 54' 10.523" W
	Disk	794.31	1256411.38	2072022.63		
	Ground	794.0				
PZ-13S	Casing	807.79	1257849.98	2069810.25	33° 27' 20.807" N	84° 54' 36.743" W
	Disk	805.59	1257848.97	2069810.38		
	Ground	805.5				
PZ-13I	Casing	807.62	1257850.30	2069817.10	33° 27' 20.811" N	84° 54' 36.662" W
	Disk	805.42	1257849.17	2069817.19		
	Ground	805.4				
PZ-14I	Casing	749.06	1257826.16	2072542.59	33° 27' 20.764" N	84° 54' 04.492" W
	Disk	746.84	1257827.25	2072543.09		
	Ground	747.2				
PZ-25S	Casing	766.60	1258856.99	2073497.99	33° 27' 31.029" N	84° 53' 53.301" W
	PK Nail	763.77	1258857.85	2073498.45		
	Ground	763.8				
PZ-25I	Casing	766.38	1258860.75	2073491.10	33° 27' 31.065" N	84° 53' 53.383" W
	PK Nail	763.69	1258861.69	2073491.62		
	Ground	763.8				
PZ-31S	Casing	738.62	1258313.70	2072820.25	33° 27' 25.606" N	84° 54' 01.256" W
	PK Nail	736.04	1258312.79	2072820.01		
	Ground	735.9				

Notes:
NAD83(2011) coordinates established by utilizing eGPS VRS & OPUS Solutions
Elevations derived from Arcadis BM#1 (El. 758.24)
Elevations & coordinates are U.S. Survey feet

EXHIBIT 4

ARCADIS

Plant Yates – Gypsum Landfill Monitoring Well and Piezometer Surveys

Monument	Concrete Base Point	NAVD88 Elevation	Georgia State Plane Grid (NAD83), West Zone		WGS84 Latitude	Longitude
			Northing	Easting		
GWA-2	Casing	805.62	1261383.11	2073509.98	33° 27' 56.021" N	84° 53' 53.370" W
	Bolt	803.25	1261383.21	2073507.93		
	Ground	803.1				
GWC-1R	Casing	773.27	1261869.77	2073279.85	33° 28' 00.820" N	84° 53' 56.127" W
	Bolt	770.69	1261868.10	2073281.57		
	Ground	770.5				
GWC-2R	Casing	769.76	1261942.15	2072755.92	33° 28' 01.499" N	84° 54' 02.317" W
	Bolt	767.13	1261944.58	2072756.60		
	Ground	766.8				
GWC-3R	Casing	775.25	1261647.10	2072841.28	33° 27' 58.586" N	84° 54' 01.285" W
	Bolt	772.32	1261646.62	2072843.63		
	Ground	772.2				
GWC-4R	Casing	757.48	1262046.56	2072953.68	33° 28' 02.546" N	84° 53' 59.992" W
	Bolt	754.88	1262044.70	2072955.00		
	Ground	754.6				
GWC-5R	Casing	782.45	1261439.91	2073027.56	33° 27' 56.550" N	84° 53' 59.069" W
	Bolt	779.69	1261441.13	2073029.78		
	Ground	780.0				
GWC-6R	Casing	788.98	1261732.91	2073479.40	33° 27' 59.480" N	84° 53' 53.760" W
	Bolt	785.95	1261730.98	2073478.53		
	Ground	785.6				

Notes:
NAD83(2011) coordinates established by utilizing eGPS VRS & OPUS Solutions
Elevations derived from Arcadis BM#1 (El. 758.24)
Elevations & coordinates are U.S. Survey feet

PHOTOGRAPH LOG

Plant Yates – Monitoring Well and Piezometer Survey
June 2020

Photograph: 1

Description:
Staked Coordinate Location for GWC-6R

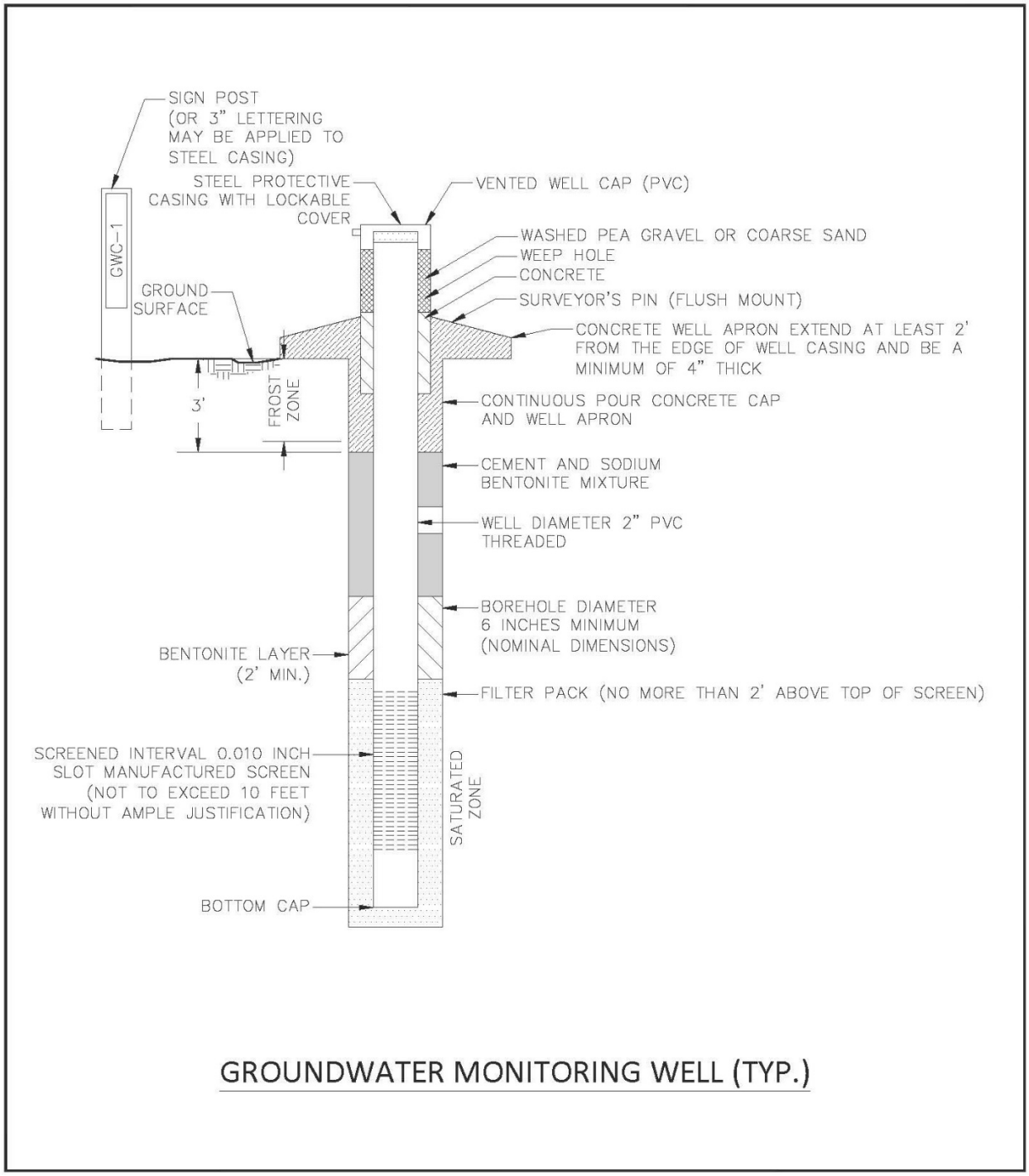
Photograph: 2

Description:
From Staked Location of GWC-6R to Found Location of GWC-6R

Photograph: 3

Description:
Existing Location of GWC-6R

APPENDIX D. GROUNDWATER MONITORING WELL DETAIL



GROUNDWATER MONITORING WELL (TYP.)

APPENDIX E. GROUNDWATER SAMPLING PROCEDURES

Groundwater sampling will be conducted using most current USEPA Region 4 Field Quality and Technical Procedures as a guide. The following procedures describe the general methods associated with groundwater sampling at the site. Prior to sampling, the well must be evacuated (purged) to ensure that representative groundwater is obtained. 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.

Sample personnel will follow the procedures below at each well to ensure that a representative sample is collected:

1. Check the well, the lock, and the locking cap for damage or evidence of tampering. Record observations and notify Georgia Power if it appears that the well has been compromised.

2. Measure and record the depth to water in all wells to be sampled prior to purging using a water measuring device consisting of probe and measuring tape capable of measuring water levels with accuracy to 0.01 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 (2) feet above the bottom of the well to prevent disturbance and suspension of any sediment present in the bottom of the well. Record the depth to which the pump is lowered. All non-dedicated pumps and wiring will be decontaminated before use and between well locations using procedures described in the latest version of the Region 4 U.S. Environmental Protection Agency Science and Ecosystem Support Division (SESD) Operating Procedure for Field Equipment Cleaning and Decontamination as a guide.

4. Measure Water Level: Immediately prior to purging, measure the water level again with the pump in the well. Leave the water level measuring device in the well.

5. Purge Well: Begin pumping the well at approximately 100 to 500 milliliters per minute (mL/min). Monitor the water level continually. Maintain a steady flow rate that results in a stabilized water level with 0.3 foot 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% for DO where DO > 0.5 mg/L (milligrams per liter). If DO < 0.5 mg/L, no stabilization criteria applies

≤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 low flow rate 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, duplicate samples may be filtered in the field prior to being placed in a sample container, clearly marked as filtered and preserved. Filtering will be accomplished by the use of 0.45 micron filters on the sampling line. At least two filter volumes of sample will pass through before filling sample containers. Filtered samples are not considered compliance samples and are only used to evaluate the effects of turbidity.

9. 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 will be 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 10 NTU and all other stabilization criteria have been met, samplers will continue purging for up to 3 additional hours in order to reduce the turbidity to 10 NTU or less, as follows:

- 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.