



REPORT

2019 Semi-Annual Groundwater Monitoring & Corrective Action Report

Georgia Power Company - Plant McDonough-Atkinson

Ash Pond 1

Submitted to:

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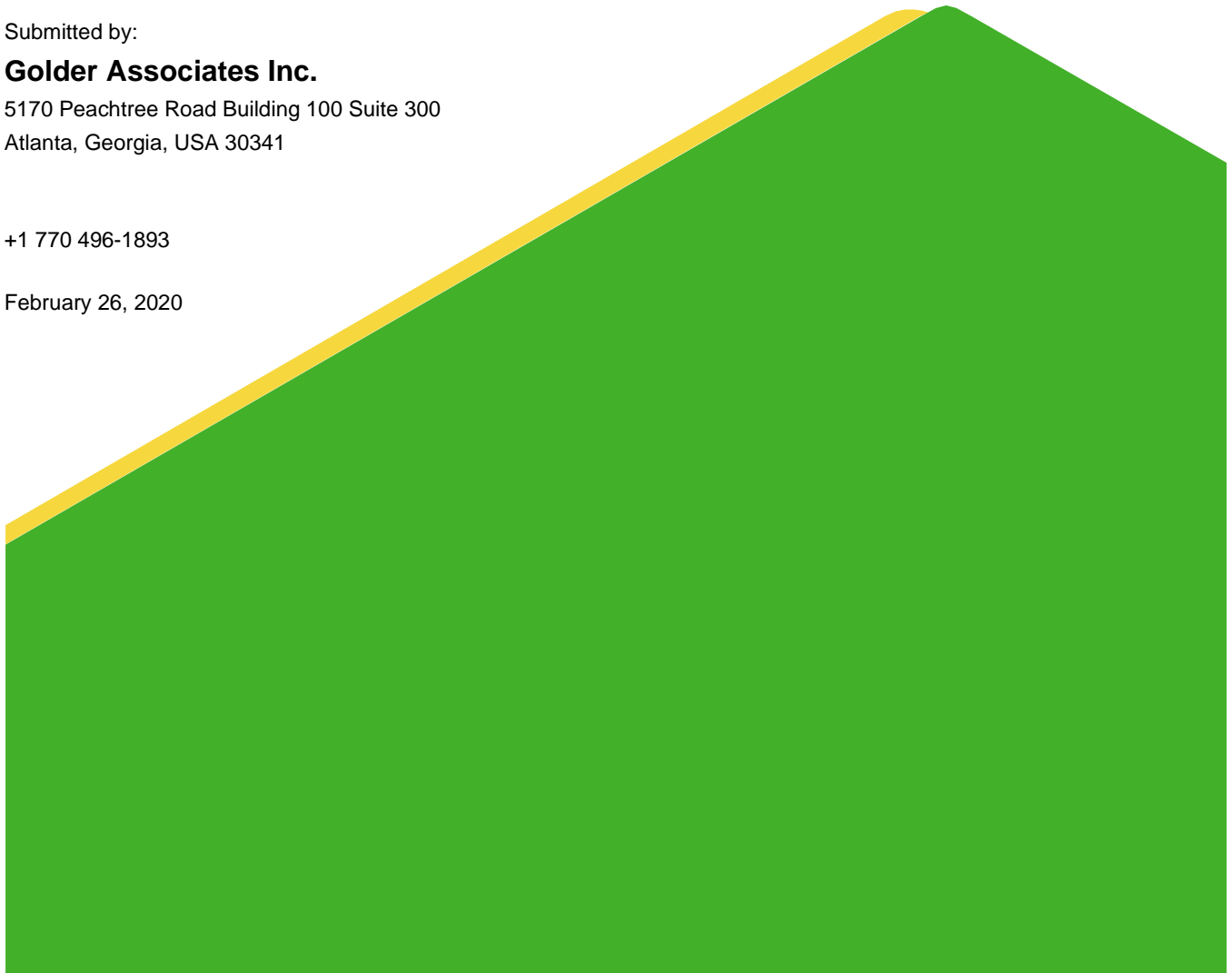


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This 2019 First Semi-Annual Groundwater Monitoring & Corrective Action Report, Georgia Power Company - Plant McDonough-Atkinson – Ash Pond 1 (AP-1) has been prepared in compliance with the United States Environmental Protection Agency coal combustion residual rule [40 Code of Federal Regulations (CFR) 257 Subpart D] and the Georgia Environmental Protection Division Rules for Solid Waste Management 391-3-4-.10 (6)(a-c) by a qualified groundwater scientist or engineer with Golder Associates Inc.

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1.0 INTRODUCTION

In accordance with the United States Environmental Protection Agency (USEPA) coal combustion residual (CCR) rule (40 Code of Federal Regulations [CFR] 257 Subpart D) and the Georgia Environmental Protection Division (EPD) Rules for Solid Waste Management 391-3-4-.10, this *2019 First Semi-Annual Groundwater Monitoring and Corrective Action Report* was prepared to document groundwater monitoring activities conducted at Georgia Power Company's (GPC's) Plant McDonough Ash Pond 1 (AP-1) and satisfies the requirements of § 257.90(e). To specify groundwater monitoring requirements, GA EPD rule 391-3-4-.10(6)(a) incorporates by reference the United States Environmental Protection Agency (USEPA) coal combustion residual (CCR) rule (40 Code of Federal Regulations [CFR] 257 Subpart D). For ease of reference, the US EPA CCR rules are cited within this report.

Two monitoring events were conducted during this monitoring period: (1) an initial assessment monitoring event was conducted in August 2019 as a result of statistical exceedances during the first detection monitoring event, and (2) the subsequent assessment event conducted in October 2019, which served as the semi-annual compliance monitoring event for the year. This report documents the activities completed through the second half of 2019 at AP-1

1.1 Site Description and Background

Plant McDonough-Atkinson (Plant McDonough), formerly a coal-fired power generating facility, was converted to a natural gas combined-cycle power generating facility in 2011. Located approximately 7 miles northwest of Atlanta in southeast Cobb County (5551 South Cobb Dr SE, Atlanta, GA 30339), the property occupies approximately 390 acres and is bounded on the southeast by the Chattahoochee River. A site location map is included as Figure 1.

Four CCR surface impoundments are located on-site: Ash Pond 1 (AP-1), Ash Pond 2 (AP-2), Ash Pond 3 (AP-3) and Ash Pond 4 (AP-4). AP-3 and AP-4 were historically operated together and are being closed as a Combined Unit AP- 3/4. A notification of intent to initiate closure of the inactive CCR surface impoundment was certified on December 7, 2015 and posted to GPC's website. A permit application package for AP-1 was submitted to Georgia EPD in November 2018 and is currently under review.

Groundwater monitoring and reporting for AP-1 are being performed in order to meet the alternate schedule in § 257.100(e)(5) of the revised USEPA CCR rule (August 5, 2016).

1.2 Regional Geology and Hydrogeologic Setting

The following section and subsections include a general description of regional geologic and hydrogeologic characteristics of formations that occur beneath the site.

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

Residual soils, primarily clayey/sandy silt, sandy silt with clay, and silty sand, occur as a variably-thick blanket overlying bedrock across most of the site. These residual saprolitic soils along with saprolitic transitionally or partially weathered rock, collectively the overburden, range between approximately 9 to 61 feet in thickness across the site, with an average thickness of approximately 38 feet. Saprolitic rock is considered to be

transitionally weathered rock or partially weathered rock (PWR). PWR is defined by Standard Penetration Test (SPT) blow counts that exceed 50 blows/six inches.

A regional, unconfined surficial aquifer system is present at the site, existing within the overburden and weathered and fractured upper bedrock (e.g., approximate first 30 feet), depending on topographic location. Recharge primarily occurs through precipitation and subsequent infiltration. Generally, groundwater flow occurs through intergranular pore spaces in the overburden and is controlled by topography and top of rock variations. However, a relatively higher transmissive zone is interpreted to occur at the base of the overburden, at the interface of weathered bedrock and competent bedrock and is believed to be the primary groundwater flow path. The overburden has an average horizontal hydraulic conductivity of 10^{-4} centimeters per second (cm/s) and is interpreted to flow south-southeast.

A limited and localized bedrock aquifer system also occurs beneath the site. The upper bedrock is fractured and weathered, connected hydraulically with the overburden groundwater, and is considered part of the upper aquifer. The overlying silt/clay-rich overburden may act to retard recharge into the bedrock aquifer system. However, deeper bedrock (i.e., approximately 30 feet into the bedrock) is unweathered with few discontinuities (e.g., fractures) available to store groundwater.

1.3 Groundwater Monitoring Network

Pursuant to § 257.91, a groundwater monitoring system was installed within the uppermost aquifer at AP-1 to monitor groundwater passing the waste boundary. Wells were located to monitor upgradient and downgradient groundwater conditions based on groundwater flow direction. The monitoring well network was certified by a Professional Engineer in Georgia on April 17, 2019, and the certification is maintained in the Operating Record pursuant to § 257.90(f).

The certified monitoring well network for AP-1 consists of three (3) upgradient monitoring wells and seven (7) downgradient monitoring wells (Figure 2). Table 1A includes well construction details for the AP-1 monitoring well network. Additionally, a series of piezometers were installed at AP-1 to measure groundwater elevations. Table 1B includes construction details for these piezometers.

2.0 GROUNDWATER MONITORING ACTIVITIES

The following section describes monitoring-related activities for sampling performed during the second semiannual period of 2019. Groundwater sampling was performed in accordance with 40 CFR § 257.93. Samples were collected from each well in the certified monitoring network. The location of each of these monitoring wells is shown on Figure 2. Table 2, Groundwater Sampling Event Summary, presents a summary of groundwater sampling events completed for AP-1.

2.1 Monitoring Well Installation and Maintenance

There was no change to the certified groundwater monitoring system in the second half of 2019 and has remained the same since 2019.

In summary, monitoring well-related activities included the following:

- Visual inspection and documentation of well conditions and performing exterior maintenance on wells as needed.
- Well redevelopment when well yield is reduced or turbid.

- Installation of additional site monitoring wells as part of ongoing site investigations. Additional monitoring wells installed at Plant McDonough are documented in a report, *Well Design, Installation, Development and Decommissioning Report-Georgia Power Company-Plant McDonough Atkinson-Ash Pond 1, Ash Pond 2, Ash Pond 3, and Ash Pond 4 dated February 25, 2020 (Appendix C)*.

Monitoring well and piezometer construction details are presented on Tables 1A and 1B, respectively, and the locations of each are shown on Figures 2 and 3, respectively.

2.2 Assessment Monitoring

Statistically Significant Increases (SSI) of Appendix III constituents were identified in the initial detection monitoring event (March 2019). Pursuant to §257.94(e)(3), an assessment monitoring program has been established for AP-1 at Plant McDonough based on the SSIs documented in the *2019 Annual Groundwater Monitoring and Corrective Action Report*, (Golder, 2019). A notice of assessment monitoring was placed in the operation record on November 13, 2019.

In accordance with § 257.95, groundwater sampling events were conducted for AP-1 during August, and October 2019. During the initial assessment monitoring event in August 2019, groundwater samples were collected and analyzed for the full suite of Appendix IV constituents to meet the requirement §257.95(b). During the subsequent October 2019 semi-annual sampling event, groundwater samples were collected for the Appendix III parameters and those Appendix IV constituents detected in the August 2019 event. Results of sampling activities conducted in the second half of 2019 are presented in Appendix A, Analytical Data Summary, Analytical Results, Field Data Forms, and Data Validation Summaries.

3.0 SAMPLE METHODOLOGY AND ANALYSIS

Two monitoring events (and resampling) were conducted during this monitoring period: (1) an initial assessment monitoring event was conducted in August 2019 as a result of statistical exceedances during the first detection monitoring event, and (2) the subsequent assessment event conducted in October 2019, which served as the semi-annual compliance monitoring event for the year. The following sections describe the methods used to conduct groundwater monitoring at the Site.

3.1 Groundwater Elevation Measurement

Prior to each sampling event, groundwater levels were measured at monitoring wells and piezometers. Groundwater elevations recorded during background, detection, and assessment monitoring events are summarized in Table 3.

Groundwater level data from the uppermost aquifer measured in October 2019 indicate the water table elevation ranges between approximately 835 feet above mean sea level (msl) at upgradient well DGWA-53 to approximately 741 feet msl at downgradient piezometer B-84. The October 2019 groundwater elevation data were used to develop a generalized potentiometric surface map of the uppermost aquifer (Figure 3). The general direction of groundwater flow across AP-1 is west/southwest. The groundwater flow pattern interpreted using the October 2019 elevation data is consistent with previous observations.

3.2 Groundwater Gradient and Flow Velocity

Hydraulic gradient is calculated as the difference in groundwater elevation (in feet) divided by the distance between two piezometers or wells (in feet). October 2019 groundwater elevation data from three piezometer/well pairings; B-29/DGWC-68A, B-28/DWGC-37, and B-50/DWGC-39, located along the groundwater flow path and

perpendicular to the potentiometric contours were used to calculate hydraulic gradients for AP-1. The hydraulic gradients for these pairings are 0.035 feet/feet (ft/ft), 0.020 ft/ft, and 0.022 ft/ft, respectively. An overall average hydraulic gradient for AP-1 derived using these individual calculated gradients is 0.025 ft/ft.

Average groundwater flow velocities at the site were calculated using hydraulic gradient data, hydraulic conductivity data generated from slug testing results, and an estimated effective porosity of the screened portion of the uppermost aquifer. Based on slug test data, the average hydraulic conductivity for the uppermost aquifer is 5.0×10^{-4} centimeters/second (cm/s), 8.4×10^{-4} cm/s in the overburden, and 1.6×10^{-4} cm/s in the upper bedrock, respectively. Assumed effective porosity of 20 percent for overburden was used based on the default values for effective porosity recommended by USEPA for a silty sand-type soil (USEPA, 1996). Assumed effective porosity of 9 percent was used for bedrock (Daniel and Dahlen, 2002; Dowd and Marshall, 1995). The hydraulic gradient was calculated between well pairs as discussed above and shown on Table 4.

Horizontal flow velocity was calculated using the commonly used derivative of Darcy's Law:

$$V = \frac{K * i}{n_e} \quad \text{Where:}$$

$V =$ Groundwater flow velocity $\left(\frac{\text{feet}}{\text{day}}\right)$
 $K =$ Average hydraulic conductivity of the aquifer $\left(\frac{\text{feet}}{\text{day}}\right)$
 $i =$ Horizontal hydraulic gradient $\left(\frac{\text{feet}}{\text{feet}}\right)$
 $n_e =$ Effective porosity

Using this equation, groundwater flow velocities were calculated for AP-1 using October 2019 groundwater elevation data. Table 4 presents the velocities calculated using groundwater elevation data from the October 2019 sampling event.

Calculated (horizontal) flow velocities ranged from approximately 94 feet per year (ft/yr) to 151 ft/yr in the overburden and 40 ft/yr to 64 ft/yr in the upper bedrock. These estimated flow velocities are also generally consistent with other published velocities for regolith-upper bedrock aquifers of the Piedmont (Heath, R.C., 1982).

3.3 Groundwater Sampling

Groundwater samples were collected during August and October 2019 in accordance with § 257.93(a) and using USEPA Region 4 Field Quality and Technical Procedures as a guide (USEPA, 2001). Monitoring wells were purged and sampled using low-flow sampling procedures. Non-dedicated, low-flow pneumatic bladder pumps and peristaltic pumps were used to purge and sample the wells. Field equipment was decontaminated prior to use and between wells using USEPA Science and Ecosystem Support Division (SESD) Operating Procedure for Field Equipment Cleaning and Decontamination as a guide (USEPA, 2015). A SmarTroll (In-Situ® field instrument) was used to monitor and record field water quality parameters [temperature, specific conductance, dissolved oxygen (DO), pH, and oxidation-reduction potential (ORP)] during purging. Turbidity was monitored using a LaMotte 2020we turbidimeter. Groundwater samples were collected when the following stabilization criteria were met for a minimum of three consecutive readings:

- 0.1 standard units for pH
- 5% for specific conductance

- ±10% for DO where DO>0.5 mg/L; if DO<0.5 milligrams per liter (mg/L), no stabilization criteria apply
- Turbidity measurements less than 5 nephelometric turbidity units (NTU)

Any deviation from stabilization criteria, if applicable, is identified on field sampling forms. Where sample turbidity was greater than 5 NTU and all other stabilization criteria were met, samplers continued purging for up to 3 additional hours in order to reduce the turbidity to 5 NTU or less. If turbidity remained above 5 NTU, but was less than 10 NTU, and all other parameters were stabilized, the well was sampled. Where turbidity remained above 10 NTU, an unfiltered sample was collected followed by a filtered sample that passed through an in-line 0.45-micron filtered attached to the discharge (sample collection) tube. The unfiltered sample data are used for compliance monitoring and in the statistical analysis database. Filtered sample data are used to assess the impacts of turbidity on groundwater quality. Additional details regarding filtered samples are recorded on the field information form and filtered samples are clearly identified as “filtered” on the laboratory reports.

Following well stabilization, unfiltered samples were collected directly into appropriately preserved laboratory supplied sample containers, placed in ice-packed coolers, and submitted to the laboratory following standard chain-of-custody protocol. Field information forms, generated directly from the SmarTroll®, and chain-of-custody records are included in Appendix A.

3.4 Laboratory Analysis

Groundwater samples were collected during two groundwater monitoring events in the second half of 2019. Since AP-1 is currently in assessment monitoring, groundwater samples from wells in the assessment monitoring program were analyzed for Appendix III and the detected Appendix IV monitoring parameters per 40 CFR Parts 257(d). Analytical methods used for groundwater monitoring parameters can be found in the analytical data reports in Appendix.

Laboratory analyses for all events were performed by Pace Analytical Services, LLC (Pace) in Norcross, Georgia. Pace is accredited by the National Environmental Laboratory Accreditation Program (NELAP) and maintains NELAP certification for all parameters analyzed for this project. Groundwater data, chain-of-custody records, and NELAP certifications for the monitoring events are presented in Appendix A.

3.5 Quality Assurance and Quality Control

During each sampling event, quality assurance/quality control (QA/QC) samples were collected at a rate of one sample per every 10 samples. QA/QC samples included equipment blanks (where non-dedicated sampling equipment is used), field blanks, and duplicate samples. QA/QC sample data was evaluated during data validation (as described below) and is included in Appendix A.

Groundwater quality data in this report was independently validated in accordance with USEPA guidance (USEPA, 2011) and the analytical methods. Data validation generally consisted of reviewing sample integrity, holding times, laboratory method blanks, laboratory control samples, matrix spikes/matrix spike duplicate recoveries and relative percent differences (RPDs), post digestion spikes, laboratory and field duplicate RPDs, field and equipment blanks, and reporting limits. Where appropriate, validation qualifiers and flags were applied to the data using USEPA procedures as guidance (USEPA, 2017). Flagged data are identified in the statistical analysis reports in Appendix B and described in the following section.

A value followed by a "J" flag in tables and laboratory reports indicate that the value is an estimated analyte concentration detected between the method detection limit (MDL) and the laboratory reporting limit (RL). The

estimated value is positively identified but is below the lowest level that can be reliably achieved within specified limits of precision and accuracy under routine laboratory operating conditions. “J” flagged data are used to establish background statistical limits but are not used when performing statistical analyses.

4.0 STATISTICAL ANALYSIS

Statistical analysis of Appendix III groundwater monitoring data was performed pursuant to § 257.93 and 391-3-4-.10(6) following the established statistical method for AP-1. Pursuant to § 257.95(d)(2) GPC will establish groundwater protection standards for the Appendix IV monitoring parameters and complete statistical analysis of the Appendix IV groundwater monitoring data obtained during the first semi-annual assessment monitoring event within 90 days of obtaining the results. GPC will complete the assessment monitoring and statistical analysis in accordance with § 257.95 and report the results in the Annual Groundwater Monitoring and Corrective Action Report, due August 1, 2020.

4.1 Statistical Method

The selected statistical method for AP-1 was developed in accordance with 40 CFR § 257.93(f), using methodology presented in Statistical Analysis of Groundwater Data at RCRA Facilities, Unified Guidance, March 2009, USEPA 530/R-09-007 (Unified Guidance; USEPA, 2009). The Sanitas groundwater statistical software was used to perform statistical analyses. Sanitas is a commercially-available decision-support software package that incorporates the statistical tests required of Subtitle C and D facilities by USEPA regulations and guidance as recommended in the USEPA Unified Guidance (2009) document.

Groundwater monitoring data was statistically evaluated through the use of interwell prediction limits for Appendix III parameters with an optional 1-of-2 verification resampling plan. This method allows for upgradient well data to be used to establish a background statistical limit or prediction limit (PL). Downgradient well data is compared to the PL to determine whether any concentrations exceed background levels. If data from downgradient wells initially exceed the PL, a second sample (or resample) may be collected within 90 days to verify the initial result or determine if the result was an outlier. If the result of the resample confirms the PL exceedance, both values remain in the database and an SSI is declared. If the initial finding is not verified by resampling, the resampled value will replace the initial value and no SSI is declared.

Downgradient well data from the October 2019 assessment monitoring event was compared to background PLs to determine whether any concentrations exceed background levels. The Sen’s Slope/Mann Kendall trend test was performed to evaluate concentrations over time and determine whether concentrations are statistically increasing, decreasing, or stabilizing.

The following table provides a summary of the statistical methodology used at AP-1 for the October 2019 assessment monitoring event and will be used for any future routine detection or assessment monitoring.

PLANT MCDONOUGH AP-1 STATISTICAL METHOD SUMMARY		
Monitoring Well Network	Upgradient Wells	DGWA-53, DGWA-70A, DGWA-71
	Downgradient Wells	DGWC-37, DGWC-38, DGWC-39, DGWC-40, DGWC-67, DGWC-68A, DGWC-69
CCR Monitoring Parameters	Appendix III (Detection Monitoring)	Boron, Calcium, Chloride, Fluoride, pH, Sulfate, TDS
	Appendix IV (Assessment Monitoring)	Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Fluoride, Lead, Lithium, Mercury, Molybdenum, Selenium, Thallium, Radium (226 + 228)
Statistical Methodology	Data Screening on Proposed Background	Evaluate outliers, trends, and seasonality when sufficient data are available.
	Statistical Limits	Interwell statistical limits will be applied on a constituent basis, depending on the appropriateness of the method as determined by the Analysis of Variance.
	Prediction Limits	Parametric when data follow a normal or transformed normal distribution and when less than 50% non-detects, utilizing Kaplan Meier non-detect adjustment when applicable; nonparametric when data sets contain greater than 50% non-detects or when data are not normally or transformed-normally distributed.
	Confidence Intervals	Used in Assessment and Corrective Action monitoring.
	No Statistical Testing	Statistical testing is not required for parameters with 100% non-detects.
	Verification Resample Plan (Optional)	1-of-2 with minimum of 8 samples per well for interwell testing. <ul style="list-style-type: none"> ▪ Initial statistical exceedance warrants independent resampling within 90 days. ▪ If resample passes, well/parameter is not considered a confirmed statistically significant increase (SSI). ▪ If resample exceeds, well/parameter has a confirmed SSI. ▪ If no resample is collected, the original result is deemed verified.

The following statements are also applicable to the statistical analytical method:

- Statistical analyses are not performed on analytes containing 100% non-detects (USPEA Unified Guidance, 2009, Chapter 6).
- When data contain less than or equal to 15% no-detects in background, simple substitution of one-half the RL is utilized in the statistical analysis. The RL utilized for non-detects is the practical quantitation limit (PQL) as reported by the laboratory.

- When data contain between 15-50% non-detects, a non-detect adjustment such as the Kaplan-Meier or Regression on Order Statistics (ROS) method for adjustment of the mean and standard deviation will be used prior to constructing a parametric prediction limit.
- Nonparametric prediction limits are used on data containing greater than 50% non-detects.

4.2 Appendix III Statistical Analyses

Analytical data from the first semi-annual detection monitoring event in October 2019 at AP-1 have been statistically analyzed in accordance with the site’s Statistical Analysis Plan. Resampling was conducted for selected wells in November and December 2019. The statistical results of the October 2019 assessment monitoring event are included in Appendix B.

Based on the statistical results presented in Appendix B, the following summarizes verified SSIs from the October 2019 assessment monitoring event:

AP-1 Inter-Well Prediction Limit Statistically Significant Increase Summary	
Appendix III Parameter	AP-1 Monitoring Wells
Boron	DGWC-37, DGWC-38, DGWC-39, DGWC-40, DGWC-67, DGWC-68A, and DGWC-69
Calcium	DGWC-37, DGWC-38, DGWC-39, DGWC-40, DGWC-67, and DGWC-68A
Chloride	DGWC-37, DGWC-38, DGWC-39, DGWC-40, DGWC-67, DGWC-68A, and DGWC-69
Fluoride	No exceedances
pH	DGWC-40, DGWC-68A
Sulfate	DGWC-37, DGWC-38, DGWC-39, DGWC-40, and DGWC-67
Total Dissolved Solids	DGWC-38, DGWC-39, and DGWC-40

Pursuant to §257.94(e)(3), an assessment monitoring program has been established for AP-1 at McDonough based on statistically significant increases documented in the *2019 Annual Groundwater Monitoring and Corrective Action Report*, (Golder 2019). A notice of assessment monitoring was placed in the operation record on November 13, 2019.

4.3 Appendix IV Statistical Analyses

Pursuant to §257.95 and Georgia EPD rule 391-3-4-.10(6)(a), Appendix IV groundwater quality data will be statistically analyzed and compared to groundwater protection standards within 90 days of receiving data from the first (October 2019) assessment monitoring event. GPC will complete the assessment monitoring and statistical analysis in accordance with § 257.95 and report the results in the Annual Groundwater Monitoring and Corrective Action Report, due August 1, 2020.

5.0 MONITORING PROGRAM STATUS

Following evaluation of Appendix III parameters, groundwater at Plant McDonough AP-1 has not returned to background conditions and will remain in assessment monitoring. Table 2 presents the status of each well within the certified monitoring network for AP-1. GPC has initiated assessment monitoring in accordance with § 257.94(e)(1-3) and will evaluate the Appendix IV groundwater monitoring data in accordance with the requirements, and options of § 257.95 and Georgia EPD rule 391-3-4-.10(6)(a)

6.0 CONCLUSIONS AND FUTURE ACTIONS

This 2019 Semi-Annual Groundwater Monitoring and Corrective Action Report, Georgia Power Plant McDonough-Atkinson - Ash Pond 1 (AP-1) was prepared to fulfill the requirements of USEPA CCR rule 40 CFR 257 Subpart D and Georgia EPD rule 391-3-4-.10.

Statistical evaluations of the groundwater monitoring data for AP-1 identified SSIs of Appendix III groundwater monitoring parameters and has initiated assessment monitoring in accordance with the requirements of § 257.95. The next scheduled sampling event is scheduled for March 2020. During the next semi-annual reporting period of 2020, GPC will establish groundwater protection standards for Appendix IV constituents in accordance with § 257.95 and report the results in the Annual Groundwater Monitoring and Corrective Action Report, due August 1, 2020.

7.0 REFERENCES

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Tables & Figures

**TABLE 1A
MONITORING WELL NETWORK SUMMARY**

**Georgia Power Company - Plant McDonough
Atlanta, GA**

Well-ID	Former Well-ID	Boring ID	Hydraulic Location	Geologic Unit Screened	Northing	Easting	Top of Casing Elevation (feet msl)	Ground Surface Elevation (feet msl)	Total Depth (feet bgs)	Top of Screen Elevation (feet msl)	Bottom of Screen Elevation (feet msl)	Date of Installation	
ASH POND 1 (AP-1) MONITORING WELL NETWORK													
DGWA-53	B-53	B-53	Upgradient	Upper Bedrock	1393475.82	2201668.95	850.74	847.24	28.9	830	820	9/24/2016	
DGWA-70	B-70	B-70	Upgradient	Overburden	1390167.51	2201107.31	ABANDONED						
DGWA-70A	B-70A	B-70A	Upgradient	Overburden	1390481.13	2200590.67	808.60	805.45	58.9	757	747	5/10/2017	
DGWA-71	B-71	B-71	Upgradient	Overburden	1393965.35	2201713.63	863.95	861.05	43.4	828	818	2/28/2017	
DGWC-37	B-37	B-37	Downgradient	Overburden	1390483.94	2200919.39	766.19	763.6	39.7	734	724	11/28/2012	
DGWC-38	B-38	B-38	Downgradient	Overburden	1390364.53	2201147.65	757.44	754.7	25.0	740	730	11/29/2012	
DGWC-39	B-39	B-39	Downgradient	Overburden	1390303.39	2201538.45	759.67	756.9	21.2	746	736	11/6/2012	
DGWC-40	B-40	B-40	Downgradient	Overburden	1390625.63	2201826.76	779.07	775.5	34.9	751	741	11/5/2012	
DGWC-67	B-67	B-67	Downgradient	Overburden	1390954.46	2200828.90	766.76	766.34	56.3	720	710	3/14/2017	
DGWC-68A	B-68A	B-68A	Downgradient	Overburden	1391301.86	2200732.41	765.61	765.00	29.4	746	736	4/20/2017	
DGWC-69	B-69	B-69	Downgradient	Overburden	1391584.72	2200656.14	763.82	763.93	24.3	750	740	3/16/2017	

Notes:

1. bgs = below ground surface; msl = mean sea level
2. DGWA-70 is not used as monitoring well due to well replacement and modifications to the proposed well network. DGWA-70 was abandoned 5/1/2017.
3. Coordinate System: NAD 1983 State Plane Georgia West (U.S. feet)

**TABLE 1B
PIEZOMETER SUMMARY**

**Georgia Power Company - Plant McDonough
Atlanta, GA**

Well-ID	Former Well-ID	Boring ID	Geologic Unit Screened	Northing	Easting	Top of Casing Elevation (feet msl)	Ground Surface Elevation (feet msl)	Total Depth (feet bgs)	Top of Screen Elevation (feet msl)	Bottom of Screen Elevation (feet msl)	Date of Installation
PIEZOMETER NETWORK											
B-3	B-3	B-3	Overburden/ Upper Bedrock	1394043.54	2202411.14	837.82	834.5	37.0	808	798	10/3/2012
B-6	B-6	B-6	Overburden	1394422.57	2203265.55	789.49	785.9	35.4	761	751	10/9/2012
B-7	B-7	B-7	Overburden	1394373.41	2203595.17	809.24	805.4	25.2	791	781	10/9/2012
B-16	B-16	B-16	Overburden	1392596.21	2203313.21	826.50	823.6	43.7	790	780	12/19/2012
B-18	B-18	B-18	Overburden	1392521.15	2202874.99	826.54	823.9	32.6	801	791	11/10/2013
B-24	B-24	B-24	Upper Bedrock	1392480.23	2201451.51	822.27	818.7	79.1	750	740	10/24/2012
B-25	B-25	B-25	Upper Bedrock	1392813.23	2201504.19	836.62	833.1	54.8	789	779	10/24/2012
B-26	DGWA-26	B-26	Upper Bedrock	1393106.18	2201551.86	853.67	850.2	49.3	811	801	10/23/2012
B-27	DGWA-27	B-27	Upper Bedrock	1393423.51	2201744.77	ABANDONED					
B-28	B-28	B-28	Overburden/ Upper Bedrock	1391970.42	2201677.59	816.10	812.8	69.4	754	744	10/31/2012
B-29	B-29	B-29	Overburden	1391891.93	2201420.25	816.45	813.5	54.4	769	759	1/11/2013
B-31	B-31	B-31	Upper Bedrock	1392035.97	2200926.82	797.42	794.8	45.1	760	750	1/22/2013
B-41	B-41	B-41	Overburden	1390922.38	2201749.84	795.22	792.4	60.0	743	733	11/14/2012
B-50	B-50	B-50	Overburden	1391656.94	2201839.72	809.78	806.28	35.2	781	771	6/24/2016
B-51	B-51	B-51	Overburden	1390501.61	2200904.19	765.93	763.00	66.0	708	698	6/27/2016
B-52	B-52	B-52	Overburden	1392309.40	2201314.05	823.22	820.07	50.0	781	771	9/28/2016
B-54	B-54	B-54	Overburden/ Upper Bedrock	1394424.75	2203140.27	785.59	782.09	34.2	758	748	9/26/2016
B-55	B-55	B-55	Overburden	1394143.23	2204146.61	825.11	821.96	52.0	781	771	9/22/2016
B-56	B-56	B-56	Overburden	1393958.64	2204186.27	823.70	820.55	45.0	786	776	10/3/2016
B-57	B-57	B-57	Upper Bedrock	1391397.46	2202735.64	789.22	785.76	50.5	746	736	9/24/2016
B-58	B-58	B-58	Overburden	1391126.84	2202425.23	788.20	784.90	45.0	750	740	9/23/2016
B-59	B-59	B-59	Overburden/ Upper Bedrock	1394349.80	2203000.17	788.16	785.30	30.2	765	755	9/23/2016
B-60	B-60	B-60	Overburden	1391101.88	2202880.57	782.12	778.87	49.8	740	730	9/29/2016
B-61	B-61	B-61	Overburden	1390958.73	2202504.81	782.03	778.58	52.4	737	727	9/29/2016
B-62	B-62	B-62	Upper Bedrock	1389828.91	2201810.02	763.34	759.94	39.9	730	720	10/4/2016
B-63	B-63	B-63	Overburden	1390999.47	2202976.11	777.15	777.45	46.0	742	732	10/6/2016
B-64	B-64	B-64	Overburden	1394383.12	2203029.71	786.02	785.85	30.4	766	756	11/2/2016
B-65	B-65	B-65	Overburden/ Upper Bedrock	1394382.64	2204049.66	822.02	822.27	45.4	788	778	11/15/2016
B-66	B-66	B-66	Overburden	1393860.16	2204276.73	815.96	813.06	55.3	768	758	11/16/2016
B-68	DGWC-68	B-68	Overburden	1391299.56	2200714.04	758.73	758.56	18.0	751	741	3/16/2017
B-77	B-77	B-77	Overburden	1390949.76	2202941.41	776.75	777.06	42.5	744.56	734.56	9/17/2019
B-78	B-78	B-78	Overburden/ Upper Bedrock	1394327.62	2202958.92	790.65	787.31	30	767.31	757.31	9/22/2019
B-79	B-79	B-79	Overburden	1394458.16	2203223.8	788.55	785.5	35	760.5	750.5	9/21/2019
B-80	B-80	B-80	Overburden	1394373.86	2203534.26	804.45	801.52	30	781.52	771.52	9/20/2019
B-81	B-81	B-81	Overburden	1394366.17	2203741.53	820.51	816.75	50	776.75	766.75	9/22/2019
B-82	B-82	B-82	Overburden	1393750.42	2204256.96	809.98	807.15	45	772.15	762.15	9/21/2019
B-83	B-83	B-83	Overburden	1390736.31	2202695.17	776.89	777.05	50	737.05	727.05	9/30/2019
B-84	B-84	B-84	Overburden	1390411.65	2202242.51	776.24	776.27	50	736.27	726.27	10/1/2019
B-85	B-85	B-85	Overburden	1394433.14	2203135.02	782.67	782.8	34.5	758.3	748.3	11/18/2019
B-86	B-86	B-86	Overburden	1394479.84	2203207.19	784.4	784.5	34.1	760.4	750.4	11/18/2020
B-87	B-87	B-87	Overburden	1394401.16	2203531.64	803.54	800.4	42	768.4	758.4	11/17/2019
B-88	B-88	B-88	Overburden	1394400.23	2203738.46	820.11	816.6	72	754.6	744.6	11/15/2019
B-89	B-89	B-89	Overburden	1394399.07	2204048.84	822.5	822.5	32.2	800.3	790.3	11/19/2019
B-90	B-90	B-90	Overburden	1394500.73	2203212.95	784.18	784.2	33.4	760.8	750.8	12/10/2019
B-91	B-91	B-91	Overburden	1394447.87	2203124.3	783.07	783.1	35	758.1	748.1	12/11/2019
B-92	B-92	B-92	Overburden	1394393.54	2203026.6	785.22	785.3	25	770.3	760.3	12/11/2019
B-93	B-93	B-93	Overburden	1394348.37	2202947.29	789.14	789.2	29.2	770	760	12/12/2019

Notes:

1. bgs = below ground surface; msl = mean sea level
2. B-26 and B-68 are not used as monitoring wells due to well replacement, proximity to closure activities, or modifications to the proposed well network.
3. B-27 was abandoned 4/4/2017.
4. Coordinate System: NAD 1983 State Plane Georgia West (U.S. feet)

TABLE 2
GROUNDWATER SAMPLING EVENT SUMMARY

Georgia Power Company - Plant McDonough
Atlanta, GA

Well ID	Hydraulic Location	Summary of Sampling Events														Status of Monitoring Well
		August - September 2016	December 2016	March - April 2017	May 2017	June 2017	July 2017	August 2017	October - November 2017	February - March 2018	July 2018	November 2018	March 2019	August 2019	October 2019	
Purpose of Sampling Event		Background	Background	Background	Background	Background	Background	Background	Background	Background	Background	Background	Detection	Initial Monitoring	Assessment	
ASH POND 1 (AP-1) MONITORING WELL NETWORK																
DGWA-53	Upgradient			BG01	BG02	BG03	BG04		BG05	BG06	BG07	BG08	D01	IM01	A01	Assessment
DGWA-70A	Upgradient				BG01	BG02	BG03	BG04	BG05	BG06	BG07	BG08	D01	IM01	A01	Assessment
DGWA-71	Upgradient			BG01	BG02	BG03	BG04		BG05	BG06	BG07	BG08	D01	IM01	A01	Assessment
DGWC-37	Downgradient	BG01	BG02	BG03			BG04		BG05	BG06	BG07	BG08	D01	IM01	A01	Assessment
DGWC-38	Downgradient	BG01	BG02	BG03			BG04		BG05	BG06	BG07	BG08	D01	IM01	A01	Assessment
DGWC-39	Downgradient	BG01	BG02	BG03			BG04		BG05	BG06	BG07	BG08	D01	IM01	A01	Assessment
DGWC-40	Downgradient	BG01	BG02	BG03			BG04		BG05	BG06	BG07	BG08	D01	IM01	A01	Assessment
DGWC-67	Downgradient			BG01	BG02	BG03	BG04		BG05	BG06	BG07	BG08	D01	IM01	A01	Assessment
DGWC-68A	Downgradient				BG01	BG02	BG03	BG04	BG05	BG06	BG07	BG08	D01	IM01	A01	Assessment
DGWC-69	Downgradient			BG01	BG02	BG03	BG04		BG05	BG06	BG07	BG08	D01	IM01	A01	Assessment

Notes:

1. BG## = Background Event Number
2. D## = Detection Event Number
3. IM## = Initial Monitoring Event Number
4. A## = Assessment Monitoring Event Number

**TABLE 3
SUMMARY OF GROUNDWATER ELEVATIONS**

**Georgia Power Company - Plant McDonough
Atlanta, GA**

Well ID	Top of Casing Elevation (feet/msl)	Groundwater Elevation (feet msl)										
		8/29/2016	12/5/2016	3/27/2017	7/10/2017	10/23/2017	2/26/2018	7/9/2018	11/5/2018	3/11/2019	8/26/2019	10/14/2019
ASH POND 1 (AP-1) MONITORING WELLS												
DGWA-53	850.74	NM	840.16	841.21	844.59	840.73	842.64	842.00	828.02	831.04	819.87	835.51
DGWA-70	778.20	NM	NM	752.10	ABANDONED							
DGWA-70A	808.60	NM	NM	NM	767.37	766.93	767.76	768.62	767.73	771.92	768.16	765.92
DGWA-71	863.95	NM	NM	834.8	835.84	835.32	835.56	835.70	834.78	837.74	835.40	834.53
DGWC-37	766.19	753.01	753.21	752.87	753.27	753.43	753.26	752.83	752.66	753.60	752.34	752.20
DGWC-38	757.44	751.24	751.24	750.99	751.00	751.60	751.09	750.74	750.60	753.11	750.73	750.53
DGWC-39	759.67	751.82	752.52	752.67	752.78	752.33	752.78	752.55	752.06	754.92	750.54	749.90
DGWC-40	779.07	760.98	760.74	761.80	762.95	760.69	762.45	762.90	761.06	764.26	759.01	757.60
DGWC-67	766.76	NM	NM	758.36	758.37	758.09	757.93	757.56	757.30	757.86	756.55	756.54
DGWC-68A	765.61	NM	NM	NM	756.30	756.46	755.73	755.81	755.69	756.02	755.35	755.32
DGWC-69	763.82	NM	NM	758.22	758.15	758.48	758.50	758.03	757.99	758.57	757.77	757.63
PIEZOMETERS												
B-3	837.82	811.85	810.09	811.86	811.36	808.91	807.28	806.10	804.82	805.58	803.77	803.22
B-6	789.49	787.40	786.35	786.98	787.04	786.72	786.18	785.43	785.19	785.89	784.15	783.89
B-7	809.24	799.54	797.50	796.76	797.04	795.51	792.92	791.26	791.04	792.20	788.36	787.60
B-16	826.50	802.60	802.25	802.61	804.41	800.02	800.71	799.59	798.25	800.45	796.05	795.20
B-18	826.54	809.19	808.33	808.53	811.84	810.19	810.71	809.21	808.21	810.41	807.50	806.93
B-24	822.27	806.65	804.87	807.18	808.10	804.72	806.23	805.47	803.00	809.86	803.09	801.61
B-25	836.62	821.63	822.51	823.42	823.85	822.68	824.06	822.50	821.06	824.12	819.20	817.71
B-26	853.67	829.13	827.14	829.97	831.02	827.90	829.45	828.59	826.26	833.30	826.25	824.82
B-27	850.29	830.16	828.94	836.76	ABANDONED							
B-28	816.10	793.30	792.40	792.42	792.12	789.56	791.14	790.07	787.90	791.89	786.52	785.52
B-29	816.45	790.87	790.42	792.15	792.30	789.57	791.80	790.69	788.83	793.96	787.99	786.67
B-31	797.42	764.17	764.31	764.68	766.38	763.81	765.11	765.23	763.62	766.88	763.61	763.07
B-41	795.22	774.74	773.24	772.28	772.46	770.97	771.32	771.01	770.28	771.76	768.70	767.98
B-50	809.78	783.18	781.78	781.93	782.49	781.16	782.32	782.04	781.00	783.83	780.34	780.17
B-51	765.93	753.69	753.90	753.57	753.89	754.08	753.86	753.44	753.26	754.15	753.00	752.80
B-52	823.22	NM	796.52	799.44	800.17	797.09	798.56	798.66	795.73	803.49	796.58	794.51
B-54	785.59	NM	781.24	780.81	780.91	781.23	780.67	780.09	780.28	780.44	779.46	779.47
B-55	825.11	NM	812.13	810.46	815.77	807.47	805.77	804.55	803.08	805.21	802.68	803.89
B-56	823.70	NM	805.57	804.87	810.59	802.42	799.29	797.00	795.42	798.40	794.91	794.27
B-57	789.22	NM	766.42	767.55	769.46	768.51	768.52	770.71	768.67	773.56	767.91	766.19
B-58	788.20	NM	764.20	765.36	767.61	766.40	766.63	768.59	766.37	771.75	765.57	763.75
B-59	788.16	NM	782.84	782.46	782.58	782.62	782.22	781.46	781.51	781.83	780.40	780.31
B-60	782.12	NM	748.58	748.44	749.87	749.49	749.48	751.13	749.78	755.46	749.91	748.89
B-61	782.03	NM	758.46	759.12	761.86	760.30	760.82	762.98	760.50	766.59	759.78	758.06
B-62	763.34	NM	745.89	745.33	745.89	751.03	749.15	748.04	745.82	754.34	746.21	745.32
B-63	777.15	NM	745.02	745.46	746.75	746.75	746.95	747.38	746.55	753.35	746.85	746.64
B-64	786.02	NM	781.29	781.40	781.50	781.67	781.20	780.54	780.67	781.01	779.69	779.66
B-65	822.02	NM	811.62	811.38	814.82	811.24	806.45	805.56	803.98	807.77	803.79	803.22
B-66	815.96	NM	801.50	799.86	804.66	799.91	798.36	797.80	796.43	798.14	794.79	796.11
B-68	758.73	NM	NM	755.45	NM	NM	NM	NM	NM	NM	754.84	754.81
B-76	760.31	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	743.2
B-77	776.75	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	745.23
B-78	790.65	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	779.94
B-79	788.55	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	781.71
B-80	804.45	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	786.97
B-81	820.51	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	788.8
B-82	809.98	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	797.42
B-83	776.89	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	744.01
B-84	776.24	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	740.54
B-85	782.67	Not Measured - Installed After First Semi-Annual Monitoring Event.										
B-86	784.40											
B-87	803.54											
B-88	820.11											
B-89	822.50											
B-90	784.18											
B-91	783.07											
B-92	785.22											
B-93	789.14											

Notes:

1. msl = mean sea level
2. NM = Not Measured
3. DGWA-70, B-27, and B-68 are not used due to well replacement, proximity to closure activities, or modifications to the proposed well network.

TABLE 4
HORIZONTAL GROUNDWATER FLOW VELOCITY CALCULATIONS - OCTOBER 2019

Georgia Power Company - Plant McDonough
Atlanta, GA

Flow Paths	Groundwater Elevation (feet msl)	Δh (feet) ¹	Δl (feet) ²	Hydraulic Gradient ($\Delta h/\Delta l$) ³	Average Hydraulic Conductivity, K (centimeter per second) ⁵		Assumed Effective Porosity (n_e) ⁶		Average Linear Groundwater Velocity			
					Overburden	Upper Bedrock	Overburden	Upper Bedrock	(feet per day) ⁴	(feet per day) ⁴	(feet per year) ⁴	(feet per year) ⁴
									Overburden	Upper Bedrock	Overburden	Upper Bedrock
ASH POND 1 (AP-1)												
B-29/DGWC-68A	786.67	31.35	900	0.035	0.00084	0.00016	0.2	0.09	0.41	0.18	151	64
	755.32											
B-28/DGWC-37	785.52	33.32	1700	0.020	0.00084	0.00016	0.2	0.09	0.23	0.10	85	36
	752.20											
B-50/DGWC-39	780.17	30.27	1400	0.022	0.00084	0.00016	0.2	0.09	0.26	0.11	94	40
	749.9											

Notes:

1. Δh = Change in groundwater elevation
2. Δl = Distance along flow path
3. $l = \Delta h / \Delta l$
4. Velocity = $(l * K)/n_e$
5. Hydraulic conductivity based on historic aquifer performance tests
6. Assumed effective porosities for overburden was based on the default values recommended by USEPA for a silty sand-type soil (1996). Assumed effective porosity for upper bedrock was derived from Daniel and Dahlen (2002) and Dowd and Marshall (1995).

TABLE 5A
ANALYTICAL DATA SUMMARY
Ash Pond 1 - Initial Assessment Monitoring Event-August 2019
Georgia Power Company - Plant McDonough
Atlanta, GA

Substance	Well ID										
	DGWA-53	DGWA-70A	DGWA-71	DGWC-37	DGWC-38	DGWC-39	DGWC-40	DGWC-67	DGWC-68A	DGWC-69	
	8/28/2019	8/27/2019	8/27/2019	8/28/2019	8/28/2019	8/28/2019	8/28/2019	8/28/2019	8/28/2019	8/28/2019	
APPENDIX III	Boron	Appendix III constituents not analyzed									
	Calcium										
	Chloride										
	Fluoride	0.42	<0.30	<0.30	ND (0.074 J)	ND (0.066 J)	ND (0.086 J)	0.14	<0.10	0.10	ND (0.070 J)
	Sulfate	Appendix III constituents not analyzed									
	pH	6.04	5.53	5.87	6.27	5.98	6.41	4.68	6.22	6.6	6.09
	TDS	Appendix III constituents not analyzed									
APPENDIX IV	Antimony	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Arsenic	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.025
	Barium	0.087	0.037	0.027	0.086	0.033	0.099	0.017	0.11	0.089	0.061
	Beryllium	<0.0030	ND (0.000079 J)	<0.0030	ND (0.000086 J)	<0.0030	<0.0030	0.0032	<0.0030	<0.0030	<0.0030
	Cadmium	<0.0025	<0.0025	<0.0025	<0.0025	ND (0.00030 J)	<0.0025	ND (0.00087 J)	ND (0.00017 J)	ND (0.00017 J)	<0.0025
	Chromium	<0.010	ND (0.00071 J)	ND (0.0018 J)	<0.010	<0.010	<0.010	ND (0.00061 J)	<0.010	<0.010	ND (0.00049 J)
	Cobalt	0.013	<0.0050	<0.0050	<0.0050	ND (0.0016 J)	0.0067	0.044	ND (0.0013 J)	<0.0050	<0.0050
	Lead	<0.0050	ND (0.000078 J)	<0.0050	ND (0.000061 J)	<0.0050	ND (0.000080 J)	ND (0.000081 J)	<0.0050	<0.0050	<0.0050
	Lithium	ND (0.0092 J)	<0.030	ND (0.0014 J)	ND (0.0025 J)	ND (0.0034 J)	<0.030	ND (0.0022 J)	ND (0.0046 J)	<0.030	ND (0.0024 J)
	Mercury	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Molybdenum	0.031	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.21	ND (0.0059 J)
	Radium	2.68	1.97	1.30 U	1.24 U	0.517 U	1.15 U	0.592 U	0.751 U	1.77	1.38
	Selenium	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	ND (0.0017 J)	<0.010	<0.010	<0.010
Thallium	<0.0010	<0.0010	<0.0010	<0.0010	ND (0.00014 J)	ND (0.000069 J)	ND (0.000070 J)	<0.0010	<0.0010	<0.0010	

Notes:

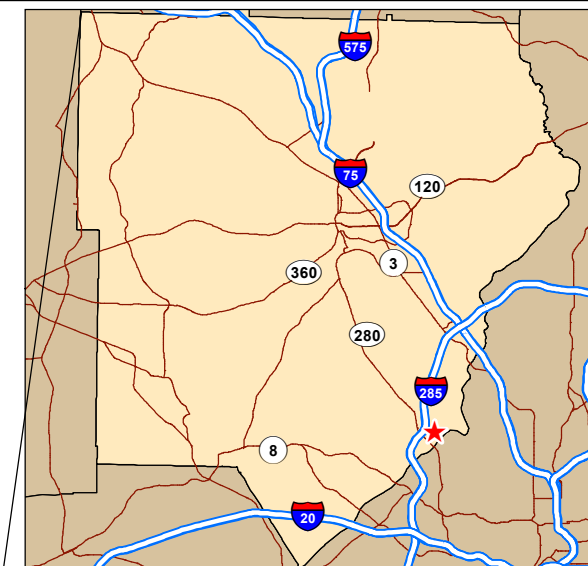
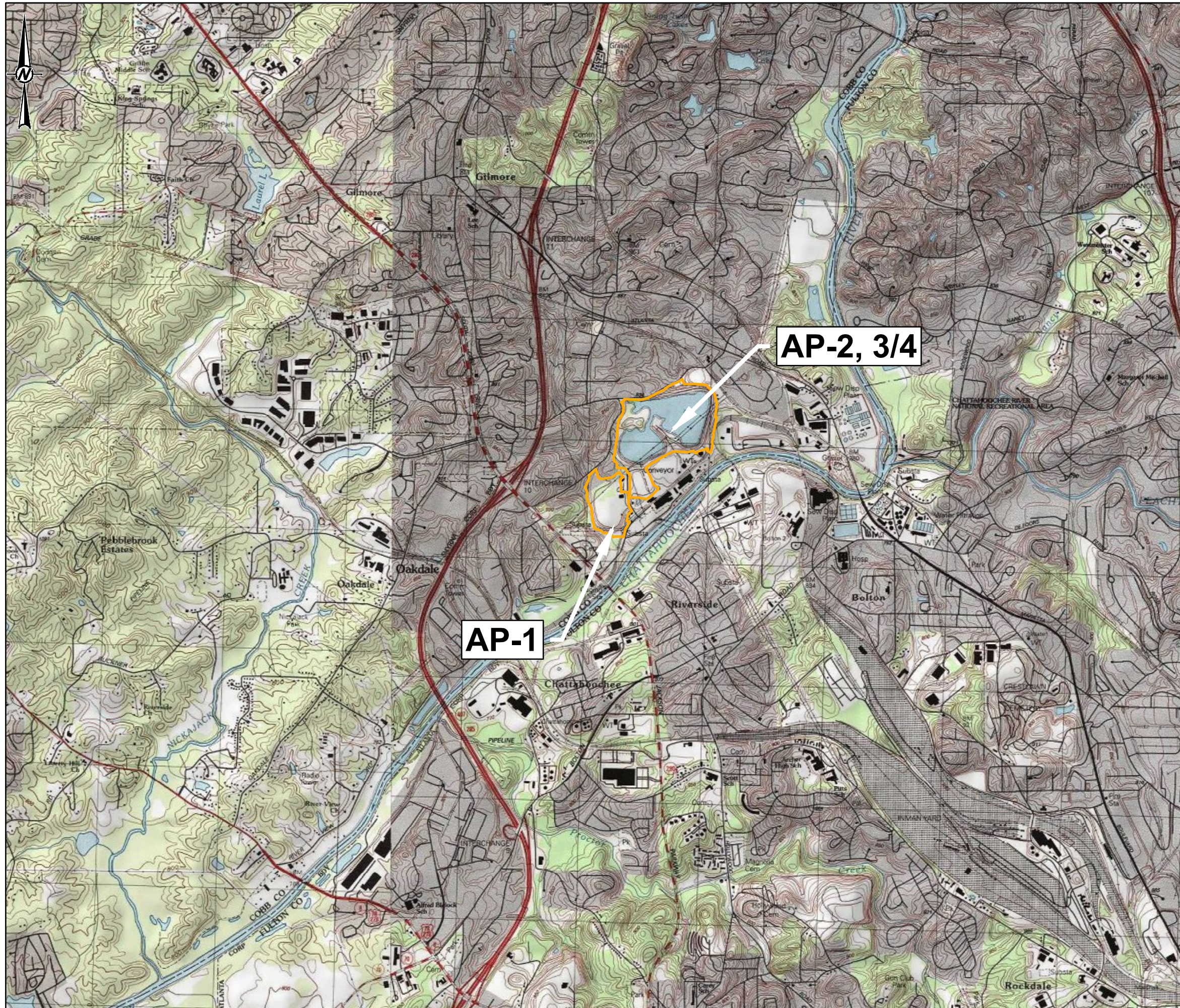
- Results for substances are reported in milligrams per liter (mg/L). Radium is reported in picocurie per liter (pCi/L).
- < indicates the substance was not detected above the analytical method detection limit (MDL). The value displayed is the laboratory reporting limit.
- ND (value J) indicates the substance was detected at such low levels that the precision of the laboratory instruments could not produce a reliable value. Therefore, the value displayed (value J) is qualified by the laboratory as an estimated number.
- TDS indicates total dissolved solids.
- Appendix III = indicator parameters evaluated during Detection Monitoring; Appendix IV = parameters evaluated during Appendix IV Scan and Assessment Monitoring.
- Radium data is a combination of radium isotopes 226 and 228. When results are reported below the MDC (Minimum Detectable Concentration), data is displayed with the U qualifier. The MDC varies depending upon the sample amount and elapsed time of the measurement.

TABLE 5B
ANALYTICAL DATA SUMMARY
Ash Pond 1 - Compliance Monitoring Event-October 2019
Georgia Power Company - Plant McDonough
Atlanta, GA

Substance	Well ID										
	DGWA-53	DGWA-70A	DGWA-71	DGWC-37	DGWC-38	DGWC-39	DGWC-40	DGWC-67	DGWC-68A	DGWC-69	
	10/16/2019	10/15/2019	10/15/2019	10/18/2019	10/18/2019	10/18/2019	10/18/2019	10/17/2019	10/16/2019	10/16/2019	
APPENDIX III	Boron	0.059	<0.040	ND (0.0054 J)	1.3	3.1	3.6	0.90	3.6	1.5	0.38
	Calcium	17.7	5.1	5.1	48.8	83.8	95.0	43.7	42.4	49.7	16.2
	Chloride	2.0	2.2	3.3	5.8	8.6	8.0	19.2	6.9	4.2	4.7
	Fluoride	ND (0.11 J)	<0.30	<0.30	ND (0.075 J)	ND (0.073 J)	ND (0.14 J)	ND (0.13 J)	ND (0.038 J)	ND (0.093 J)	ND (0.13 J)
	Sulfate	15.1	ND (0.16 J)	7.4	76.4	239	182	205	99.4	32.1	13.3
	pH	6.51	5.61	5.88	6.26	6	6.35	4.71	6.14	6.6	6.19
TDS	126	70.0	89.0	269	494	489	360	281	218	108	
APPENDIX IV	Antimony	<0.0030	<0.0030	<0.0030	-	-	-	-	-	-	-
	Arsenic	ND (0.0018 J)	ND (0.00052 J)	ND (0.00071 J)	<0.0050	<0.0050	ND (0.00075 J)	<0.0050	ND (0.00042 J)	<0.0050	0.023
	Barium	0.077	0.034	0.024	0.079	0.032	0.10	0.019	0.10	0.089	0.10
	Beryllium	<0.0030	<0.0030	ND (0.00088 J)	<0.0030	<0.0030	<0.0030	0.0033	<0.0030	<0.0030	<0.0030
	Cadmium	<0.0025	<0.0025	<0.0025	<0.0025	ND (0.00016 J)	<0.0025	ND (0.00088 J)	<0.0025	ND (0.00017 J)	ND (0.00017 J)
	Chromium	<0.010	0.034	ND (0.0025 J)	<0.010	ND (0.00092 J)	<0.010	ND (0.00078 J)	<0.010	<0.010	<0.010
	Cobalt	0.0090	ND (0.00064 J)	<0.0050	<0.0050	ND (0.0016 J)	0.0070	0.043	ND (0.0013 J)	<0.0050	<0.0050
	Lead	<0.0050	<0.0050	<0.0050	<0.0050	ND (0.000074 J)	<0.0050	ND (0.00015 J)	<0.0050	<0.0050	<0.0050
	Lithium	ND (0.0094 J)	<0.030	ND (0.0012 J)	ND (0.0026 J)	ND (0.0032 J)	<0.030	ND (0.0024 J)	ND (0.0047 J)	<0.030	ND (0.0032 J)
	Mercury	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Molybdenum	0.037	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.22	0.010
	Radium	1.89	0.319 U	1.21 U	Results Pending	Results Pending	Results Pending	Results Pending	Results Pending	2.12	0.826 U
	Selenium	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	ND (0.0027 J)	<0.010	<0.010	<0.010
Thallium	<0.0010	<0.0010	<0.0010	<0.0010	ND (0.00010 J)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	

Notes:

1. Results for substances are reported in milligrams per liter (mg/L). Radium is reported in picocurie per liter (pCi/L).
2. < indicates the substance was not detected above the analytical method detection limit (MDL). The value displayed is the laboratory reporting limit.
3. ND (value J) indicates the substance was detected at such low levels that the precision of the laboratory instruments could not produce a reliable value. Therefore, the value displayed (value J) is qualified by the laboratory as an estimated number.
4. TDS indicates total dissolved solids.
5. Appendix III = indicator parameters evaluated during Detection Monitoring; Appendix IV = parameters evaluated during Appendix IV Scan and Assessment Monitoring.
6. Radium data is a combination of radium isotopes 226 and 228. When results are reported below the MDC (Minimum Detectable Concentration), data is displayed with the U qualifier. The MDC varies depending upon the sample amount and elapsed time of the measurement.

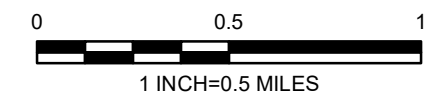


AP-2, 3/4

AP-1

REFERENCE

SERVICE LAYER CREDITS: COPYRIGHT:© 2013 NATIONAL GEOGRAPHIC SOCIETY, I-CUBED



CLIENT
 GEORGIA POWER COMPANY
 PLANT MCDONOUGH
 PROJECT
 ANNUAL GROUNDWATER MONITORING REPORT
 PLANT MCDONOUGH

TITLE
SITE LOCATION MAP

CONSULTANT	YYYY-MM-DD	2019-1-31
	PREPARED	SEB
	DESIGN	SEB
	REVIEW	KNJ
	APPROVED	TIR

PROJECT No.
 166849618

Rev.
 0

THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN. THE SHEET HAS BEEN MODIFIED FROM ANS/B



LEGEND

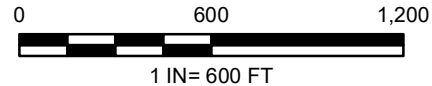
- ◆ UPGRADIENT WELL
- ◆ AP-1 MONITORING WELL
- AP-1 PERMIT BOUNDARY
- - - PROPERTY BOUNDARY

NOTES

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.

REFERENCE

1. SERVICE LAYER CREDITS: SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY.
2. COORDINATE SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET).
3. MONITORING WELL LOCATIONS PROVIDED BY SOUTHERN COMPANY SERVICES.
4. APPROXIMATE PROPERTY BOUNDARY PROVIDED BY SOUTHERN COMPANY (2018). DATE OF PHOTOGRAPHY 09-7-2018.



CLIENT
 GEORGIA POWER COMPANY
 PLANT MCDONOUGH

PROJECT
 ANNUAL GROUNDWATER MONITORING REPORT
 PLANT MCDONOUGH

TITLE
**ASH POND 1 (AP-1) SITE PLAN & MONITORING WELL
 LOCATION MAP**

CONSULTANT	YYYY-MM-DD	2019-1-31
	PREPARED	SEB
	DESIGN	SEB
	REVIEW	KNJ
	APPROVED	TIR

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

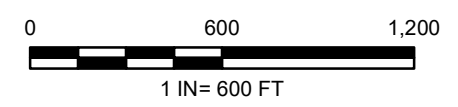
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET HAS BEEN MODIFIED FROM ANSIB



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

- NOTES**
1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
 2. GROUNDWATER ELEVATION MEASUREMENTS OBTAINED OCTOBER 14, 2019 BY GOLDER ASSOCIATES.
 3. GROUNDWATER ELEVATIONS DISPLAYED IN FEET ABOVE MEAN SEA LEVEL (FAMSL).
 4. B-27, B-68, AND DGWA-70 ARE NOT USED AS MONITORING WELLS DUE TO WELL REPLACEMENT, PROXIMITY TO CLOSURE ACTIVITIES, OR MODIFICATIONS TO THE PROPOSED WELL NETWORK.
 5. B-76 TO B-84 WERE NOT INCLUDED DUE TO LACK OF SURVEY.

- REFERENCE**
1. SERVICE LAYER CREDITS: SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AERGRID, IGN, AND THE GIS USER COMMUNITY.
 2. COORDINATE SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST (U.S. FEET).
 3. MONITORING WELL/PIEZOMETER LOCATIONS PROVIDED BY SOUTHERN COMPANY SERVICES.
 4. APPROXIMATE PROPERTY BOUNDARY PROVIDED BY SOUTHERN COMPANY (2018). DATE OF PHOTOGRAPHY 09-7-2018.



DRAFT

CLIENT
SOUTHERN COMPANY SERVICES, INC.
PLANT MCDONOUGH

PROJECT
ESTIMATED POTENTIOMETRIC SURFACE



TITLE
**SITE POTENTIOMETRIC MAP
OCTOBER 14, 2019**

CONSULTANT	YYYY-MM-DD	2019-10-15
	PREPARED	SEB
	DESIGN	SEB
	REVIEW	JRJ
	APPROVED	TIR

PROJECT No. 166849618 Rev. 0 FIGURE 3

CONFIDENTIAL
Attorney Client Communication
Attorney Work Product
Work in Progress

Path: Q:\GIS\Southern Company\1668496-SCS-Plant McDonough\Figures\SitePotentialMap_SEB.mxd

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

APPENDIX A

Laboratory Analytical Data & Field Data Forms

January 03, 2020

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

RE: Project: Plant McDonough Background
Pace Project No.: 2622481

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on August 28, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kevin Herring for
Betsy McDaniel
betsy.mcdaniel@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: Daniela Herrera, Golder
Ben Hodges, Georgia Power
Jimmy Jones, Golder Associates Inc.
Kristen Jurinko
Julie Lehrman, Golder Associates Inc.
Dawn Prell, Golder Associates Inc.
Tim Richards, Golder Associates - Atlanta
Rebecca Thornton, Pace Analytical Atlanta



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Plant McDonough Background

Pace Project No.: 2622481

Pace Analytical Services Atlanta

110 Technology Parkway Peachtree Corners, GA 30092

Florida DOH Certification #: E87315

Georgia DW Inorganics Certification #: 812

Georgia DW Microbiology Certification #: 812

North Carolina Certification #: 381

South Carolina Certification #: 98011001

Virginia Certification #: 460204

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SAMPLE SUMMARY

Project: Plant McDonough Background
Pace Project No.: 2622481

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622481001	DGWA-70A	Water	08/27/19 10:20	08/28/19 10:01
2622481002	DGWA-71	Water	08/27/19 15:10	08/28/19 10:01
2622481003	FB-1	Water	08/27/19 10:30	08/28/19 10:01

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SAMPLE ANALYTE COUNT

Project: Plant McDonough Background

Pace Project No.: 2622481

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2622481001	DGWA-70A	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1
2622481002	DGWA-71	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1
2622481003	FB-1	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1

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ANALYTICAL RESULTS

Project: Plant McDonough Background
Pace Project No.: 2622481

Sample: DGWA-70A		Lab ID: 2622481001		Collected: 08/27/19 10:20		Received: 08/28/19 10:01		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	08/29/19 18:05	08/30/19 20:22	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	08/29/19 18:05	08/30/19 20:22	7440-38-2	
Barium	0.037	mg/L	0.010	0.00049	1	08/29/19 18:05	08/30/19 20:22	7440-39-3	
Beryllium	0.000079J	mg/L	0.0030	0.000074	1	08/29/19 18:05	08/30/19 20:22	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00011	1	08/29/19 18:05	08/30/19 20:22	7440-43-9	
Chromium	0.00071J	mg/L	0.010	0.00039	1	08/29/19 18:05	08/30/19 20:22	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	08/29/19 18:05	08/30/19 20:22	7440-48-4	
Lead	0.000078J	mg/L	0.0050	0.000046	1	08/29/19 18:05	08/30/19 20:22	7439-92-1	B
Lithium	ND	mg/L	0.030	0.00078	1	08/29/19 18:05	08/30/19 20:22	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	08/29/19 18:05	08/30/19 20:22	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	08/29/19 18:05	08/30/19 20:22	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	08/29/19 18:05	08/30/19 20:22	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	08/29/19 09:13	08/29/19 12:21	7439-97-6	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Fluoride	ND	mg/L	0.30	0.029	1		09/01/19 03:38	16984-48-8	1A

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant McDonough Background
Pace Project No.: 2622481

Sample: DGWA-71		Lab ID: 2622481002		Collected: 08/27/19 15:10		Received: 08/28/19 10:01		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	08/29/19 18:05	09/03/19 20:22	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	08/29/19 18:05	09/03/19 20:22	7440-38-2	
Barium	0.027	mg/L	0.010	0.00049	1	08/29/19 18:05	09/03/19 20:22	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	08/29/19 18:05	09/03/19 20:22	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00011	1	08/29/19 18:05	09/03/19 20:22	7440-43-9	
Chromium	0.0018J	mg/L	0.010	0.00039	1	08/29/19 18:05	09/03/19 20:22	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	08/29/19 18:05	09/03/19 20:22	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	08/29/19 18:05	09/03/19 20:22	7439-92-1	
Lithium	0.0014J	mg/L	0.030	0.00078	1	08/29/19 18:05	09/03/19 20:22	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	08/29/19 18:05	09/03/19 20:22	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	08/29/19 18:05	09/03/19 20:22	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	08/29/19 18:05	09/03/19 20:22	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	08/29/19 09:13	08/29/19 12:24	7439-97-6	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Fluoride	ND	mg/L	0.30	0.029	1		09/01/19 04:00	16984-48-8	1A

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant McDonough Background
Pace Project No.: 2622481

Sample: FB-1		Lab ID: 2622481003		Collected: 08/27/19 10:30		Received: 08/28/19 10:01		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	0.00078J	mg/L	0.0030	0.00027	1	08/29/19 18:05	09/03/19 20:45	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	08/29/19 18:05	09/03/19 20:45	7440-38-2	
Barium	ND	mg/L	0.010	0.00049	1	08/29/19 18:05	09/03/19 20:45	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	08/29/19 18:05	09/03/19 20:45	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00011	1	08/29/19 18:05	09/03/19 20:45	7440-43-9	
Chromium	0.0027J	mg/L	0.010	0.00039	1	08/29/19 18:05	09/03/19 20:45	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	08/29/19 18:05	09/03/19 20:45	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	08/29/19 18:05	09/03/19 20:45	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	08/29/19 18:05	09/03/19 20:45	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	08/29/19 18:05	09/03/19 20:45	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	08/29/19 18:05	09/03/19 20:45	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	08/29/19 18:05	09/03/19 20:45	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	08/29/19 09:13	08/29/19 12:26	7439-97-6	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Fluoride	ND	mg/L	0.30	0.029	1		09/01/19 04:23	16984-48-8	1A

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant McDonough Background
Pace Project No.: 2622481

QC Batch: 34472 Analysis Method: EPA 7470A
QC Batch Method: EPA 7470A Analysis Description: 7470 Mercury
Associated Lab Samples: 2622481001, 2622481002, 2622481003

METHOD BLANK: 155027 Matrix: Water
Associated Lab Samples: 2622481001, 2622481002, 2622481003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	08/29/19 11:39	

LABORATORY CONTROL SAMPLE: 155028

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0027	108	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155029 155030

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2622479001 Result	Spike Conc.	Spike Conc.	Conc.								
Mercury	mg/L	ND	0.0025	0.0025	0.0025	0.0026	97	99	75-125	3	20		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant McDonough Background
Pace Project No.: 2622481

QC Batch: 34496 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2622481001

METHOD BLANK: 155177 Matrix: Water
Associated Lab Samples: 2622481001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	08/30/19 17:42	
Arsenic	mg/L	ND	0.0050	0.00035	08/30/19 17:42	
Barium	mg/L	ND	0.010	0.00049	08/30/19 17:42	
Beryllium	mg/L	ND	0.0030	0.000074	08/30/19 17:42	
Cadmium	mg/L	ND	0.0025	0.00011	08/30/19 17:42	
Chromium	mg/L	ND	0.010	0.00039	08/30/19 17:42	
Cobalt	mg/L	ND	0.0050	0.00030	08/30/19 17:42	
Lead	mg/L	ND	0.0050	0.000046	08/30/19 17:42	
Lithium	mg/L	ND	0.030	0.00078	08/30/19 17:42	
Molybdenum	mg/L	ND	0.010	0.00095	08/30/19 17:42	
Selenium	mg/L	ND	0.010	0.0013	08/30/19 17:42	
Thallium	mg/L	ND	0.0010	0.000052	08/30/19 17:42	

LABORATORY CONTROL SAMPLE: 155178

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.10	104	80-120	
Arsenic	mg/L	0.1	0.10	101	80-120	
Barium	mg/L	0.1	0.10	104	80-120	
Beryllium	mg/L	0.1	0.10	104	80-120	
Cadmium	mg/L	0.1	0.10	103	80-120	
Chromium	mg/L	0.1	0.10	103	80-120	
Cobalt	mg/L	0.1	0.10	101	80-120	
Lead	mg/L	0.1	0.10	101	80-120	
Lithium	mg/L	0.1	0.11	105	80-120	
Molybdenum	mg/L	0.1	0.10	105	80-120	
Selenium	mg/L	0.1	0.10	102	80-120	
Thallium	mg/L	0.1	0.10	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155179 155180

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		2622479002 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
Antimony	mg/L	ND	0.1	0.1	0.10	0.10	104	102	75-125	2	20	
Arsenic	mg/L	ND	0.1	0.1	0.11	0.11	106	107	75-125	1	20	
Barium	mg/L	0.036	0.1	0.1	0.14	0.13	103	97	75-125	4	20	
Beryllium	mg/L	0.00024J	0.1	0.1	0.098	0.095	97	95	75-125	3	20	
Cadmium	mg/L	0.00072J	0.1	0.1	0.10	0.099	100	98	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant McDonough Background

Pace Project No.: 2622481

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155179		155180		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		2622479002 Result	MS Spike Conc.	MSD Spike Conc.									
Chromium	mg/L	ND	0.1	0.1	0.099	0.097	99	97	75-125	2	20		
Cobalt	mg/L	0.0018J	0.1	0.1	0.098	0.098	97	96	75-125	1	20		
Lead	mg/L	0.000049J	0.1	0.1	0.094	0.093	94	93	75-125	1	20		
Lithium	mg/L	0.0033J	0.1	0.1	0.10	0.10	100	97	75-125	2	20		
Molybdenum	mg/L	0.0065J	0.1	0.1	0.11	0.11	106	105	75-125	1	20		
Selenium	mg/L	ND	0.1	0.1	0.11	0.11	106	109	75-125	2	20		
Thallium	mg/L	ND	0.1	0.1	0.096	0.095	96	95	75-125	1	20		

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QUALITY CONTROL DATA

Project: Plant McDonough Background
Pace Project No.: 2622481

QC Batch: 34528 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2622481002, 2622481003

METHOD BLANK: 155360 Matrix: Water
Associated Lab Samples: 2622481002, 2622481003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	09/03/19 20:11	
Arsenic	mg/L	ND	0.0050	0.00035	09/03/19 20:11	
Barium	mg/L	ND	0.010	0.00049	09/03/19 20:11	
Beryllium	mg/L	ND	0.0030	0.000074	09/03/19 20:11	
Cadmium	mg/L	ND	0.0025	0.00011	09/03/19 20:11	
Chromium	mg/L	ND	0.010	0.00039	09/03/19 20:11	
Cobalt	mg/L	ND	0.0050	0.00030	09/03/19 20:11	
Lead	mg/L	ND	0.0050	0.000046	09/03/19 20:11	
Lithium	mg/L	ND	0.030	0.00078	09/03/19 20:11	
Molybdenum	mg/L	ND	0.010	0.00095	09/03/19 20:11	
Selenium	mg/L	ND	0.010	0.0013	09/03/19 20:11	
Thallium	mg/L	ND	0.0010	0.000052	09/03/19 20:11	

LABORATORY CONTROL SAMPLE: 155361

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.12	118	80-120	
Arsenic	mg/L	0.1	0.10	105	80-120	
Barium	mg/L	0.1	0.11	105	80-120	
Beryllium	mg/L	0.1	0.11	109	80-120	
Cadmium	mg/L	0.1	0.11	108	80-120	
Chromium	mg/L	0.1	0.11	107	80-120	
Cobalt	mg/L	0.1	0.11	106	80-120	
Lead	mg/L	0.1	0.10	105	80-120	
Lithium	mg/L	0.1	0.11	107	80-120	
Molybdenum	mg/L	0.1	0.11	108	80-120	
Selenium	mg/L	0.1	0.11	107	80-120	
Thallium	mg/L	0.1	0.10	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155362 155363

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2622481002 Result	Spike Conc.	Spike Conc.	MS Result								
Antimony	mg/L	ND	0.1	0.1	0.11	0.12	114	117	75-125	2	20		
Arsenic	mg/L	ND	0.1	0.1	0.10	0.10	100	103	75-125	3	20		
Barium	mg/L	0.027	0.1	0.1	0.13	0.13	101	107	75-125	4	20		
Beryllium	mg/L	ND	0.1	0.1	0.10	0.10	101	102	75-125	1	20		
Cadmium	mg/L	ND	0.1	0.1	0.10	0.11	103	106	75-125	2	20		

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QUALITY CONTROL DATA

Project: Plant McDonough Background

Pace Project No.: 2622481

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155362		155363		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		2622481002 Result	MS Spike Conc.	MSD Spike Conc.									
Chromium	mg/L	0.0018J	0.1	0.1	0.11	0.11	104	107	75-125	3	20		
Cobalt	mg/L	ND	0.1	0.1	0.10	0.11	103	107	75-125	4	20		
Lead	mg/L	ND	0.1	0.1	0.10	0.10	101	104	75-125	3	20		
Lithium	mg/L	0.0014J	0.1	0.1	0.10	0.10	100	103	75-125	3	20		
Molybdenum	mg/L	ND	0.1	0.1	0.11	0.11	106	110	75-125	4	20		
Selenium	mg/L	ND	0.1	0.1	0.10	0.11	103	106	75-125	4	20		
Thallium	mg/L	ND	0.1	0.1	0.10	0.10	102	104	75-125	3	20		

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QUALITY CONTROL DATA

Project: Plant McDonough Background
Pace Project No.: 2622481

QC Batch: 34615 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2622481001, 2622481002, 2622481003

METHOD BLANK: 155878 Matrix: Water
Associated Lab Samples: 2622481001, 2622481002, 2622481003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.30	0.029	08/31/19 20:05	1A

LABORATORY CONTROL SAMPLE: 155879

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	10	9.4	94	90-110	1A

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QUALIFIERS

Project: Plant McDonough Background

Pace Project No.: 2622481

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

BATCH QUALIFIERS

Batch: 34615

[1] Batch accepted based on laboratory control sample (LCS) recovery.

ANALYTE QUALIFIERS

1A Batch accepted based on laboratory control sample (LCS) recovery.

B Analyte was detected in the associated method blank.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant McDonough Background
Pace Project No.: 2622481

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622481001	DGWA-70A	EPA 3005A	34496	EPA 6020B	34557
2622481002	DGWA-71	EPA 3005A	34528	EPA 6020B	34560
2622481003	FB-1	EPA 3005A	34528	EPA 6020B	34560
2622481001	DGWA-70A	EPA 7470A	34472	EPA 7470A	34485
2622481002	DGWA-71	EPA 7470A	34472	EPA 7470A	34485
2622481003	FB-1	EPA 7470A	34472	EPA 7470A	34485
2622481001	DGWA-70A	EPA 300.0	34615		
2622481002	DGWA-71	EPA 300.0	34615		
2622481003	FB-1	EPA 300.0	34615		

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A		Section B		Section C	
Required Client Information:		Required Project Information:		Invoice Information:	
Company: Georgia Power - Coal Combustion Residuals	Report To: Jay Abraham	Attention: sccinvoic@southernco.com	Company Name:	Company Name:	Company Name:
Address: 2480 Maner Road	Copy To: Golder	Purchase Order #: SCS10382775	Address:	Address:	Address:
Email: jahraham@southernco.com	Project Name: Plant McDonough Background	Pace Quote:	Pace Project Manager: belsy.mcdaniel@paceelabs.com	Pace Project Manager:	Pace Project Manager:
Phone: (404)506-7239	Project #: 168949818	Pace Profile #: 332,7,2	State / Location:	State / Location:	State / Location:
Requested Due Date: Standard TAT			Regulatory Agency:	Regulatory Agency:	Regulatory Agency:

Page: 1 Of 1

ITEM #	MATRIX CODE (see vial codes to left)	SAMPLE TYPE (G-GRAB C-COMP)	DATE	TIME	DATE	TIME	RECEIVED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	TEMP in C	Received on	Cooling (Y/N)	Sealed (Y/N)	Custody (Y/N)	Samples Intact (Y/N)	Residuals (Y/N)	Requester / Analysis Filtered (Y/N)	
																					MATRIX CODE (see vial codes to left)
1	DGWA-70A	G	8/27/2019	1020	8/28/19	908	Y. Paise	8/28/19	908	Y. Paise	8/28/19	908	8.8								
2	DGWA-71	G	8/27/2019	1510	8/28/19	1001	Golder	8/28/19	1001	M. Goldman	8/28/19	1001	8.8								
3	FB-1	WT	8/27/2019	1030																	
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

NO#: 2622481



ADDITIONAL COMMENTS	RECEIVED BY / AFFILIATION	DATE	TIME	RECEIVED BY / AFFILIATION	DATE	TIME	TEMP in C	Received on	Cooling (Y/N)	Sealed (Y/N)	Custody (Y/N)	Samples Intact (Y/N)
Y. Paise	Y. Paise	8/28/19	908	Y. Paise	8/28/19	908	8.8					
Golder	Golder	8/28/19	1001	M. Goldman	8/28/19	1001	8.8					

* Metals = Hg, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Ti



Sample Condition Upon Receipt

Client Name: GA Power

Project # _____

WO#: **2622481**

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

PM: BM Due Date: 09/05/19

Tracking #: _____ Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

CLIENT: GAPower-CCR

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used 83 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temperature 0.8 Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: 8/28/19 MR

Temp should be above freezing to 6°C Comments: _____

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
		Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: _____ Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

September 26, 2019

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

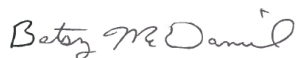
RE: Project: Plant McDonough Background
Pace Project No.: 2622482

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on August 28, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Betsy McDaniel
betsy.mcdaniel@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: Ms. Jean Brown, Georgia Power_Southern Company
Ben Hodges, Georgia Power
Kristen Jurinko, Golder Associates Inc.
Julie Lehrman, Golder Associates Inc.
Dawn Prell, Golder Associates Inc.
Tim Richards, Golder Associates - Atlanta
Rebecca Thornton, Pace Analytical Atlanta
Dominic Weatherhill, Georgia Power



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CERTIFICATIONS

Project: Plant McDonough Background
Pace Project No.: 2622482

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991

Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: Plant McDonough Background
Pace Project No.: 2622482

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622482001	DGWA-70A	Water	08/27/19 10:20	08/28/19 10:01
2622482002	DGWA-71	Water	08/27/19 15:10	08/28/19 10:01
2622482003	FB-1	Water	08/27/19 10:30	08/28/19 10:01

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SAMPLE ANALYTE COUNT

Project: Plant McDonough Background

Pace Project No.: 2622482

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2622482001	DGWA-70A	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622482002	DGWA-71	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622482003	FB-1	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McDonough Background

Pace Project No.: 2622482

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	1.11 ± 0.420 (0.348) C:84% T:NA	pCi/L	09/20/19 07:20	13982-63-3	
Radium-228	EPA 9320	0.863 ± 0.385 (0.642) C:81% T:91%	pCi/L	09/23/19 10:55	15262-20-1	
Total Radium	Total Radium Calculation	1.97 ± 0.805 (0.990)	pCi/L	09/24/19 10:31	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McDonough Background

Pace Project No.: 2622482

Sample: DGWA-71 **Lab ID: 2622482002** Collected: 08/27/19 15:10 Received: 08/28/19 10:01 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.435 ± 0.334 (0.581) C:72% T:NA	pCi/L	09/20/19 07:20	13982-63-3	
Radium-228	EPA 9320	0.867 ± 0.464 (0.843) C:81% T:78%	pCi/L	09/23/19 10:55	15262-20-1	
Total Radium	Total Radium Calculation	1.30 ± 0.798 (1.42)	pCi/L	09/24/19 10:31	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McDonough Background

Pace Project No.: 2622482

Sample: FB-1 **Lab ID: 2622482003** Collected: 08/27/19 10:30 Received: 08/28/19 10:01 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.200 ± 0.274 (0.592) C:88% T:NA	pCi/L	09/20/19 07:20	13982-63-3	
Radium-228	EPA 9320	0.386 ± 0.361 (0.740) C:79% T:86%	pCi/L	09/23/19 10:55	15262-20-1	
Total Radium	Total Radium Calculation	0.586 ± 0.635 (1.33)	pCi/L	09/24/19 10:31	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant McDonough Background

Pace Project No.: 2622482

QC Batch: 359967 Analysis Method: EPA 9315

QC Batch Method: EPA 9315 Analysis Description: 9315 Total Radium

Associated Lab Samples: 2622482001, 2622482002, 2622482003

METHOD BLANK: 1747391 Matrix: Water

Associated Lab Samples: 2622482001, 2622482002, 2622482003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.763 ± 0.364 (0.510) C:93% T:NA	pCi/L	09/20/19 07:14	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant McDonough Background

Pace Project No.: 2622482

QC Batch:	359968	Analysis Method:	EPA 9320
QC Batch Method:	EPA 9320	Analysis Description:	9320 Radium 228
Associated Lab Samples:	2622482001, 2622482002, 2622482003		

METHOD BLANK:	1747392	Matrix:	Water
Associated Lab Samples:	2622482001, 2622482002, 2622482003		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.921 ± 0.439 (0.755) C:82% T:78%	pCi/L	09/23/19 10:55	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Plant McDonough Background
Pace Project No.: 2622482

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant McDonough Background

Pace Project No.: 2622482

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622482001	DGWA-70A	EPA 9315	359967		
2622482002	DGWA-71	EPA 9315	359967		
2622482003	FB-1	EPA 9315	359967		
2622482001	DGWA-70A	EPA 9320	359968		
2622482002	DGWA-71	EPA 9320	359968		
2622482003	FB-1	EPA 9320	359968		
2622482001	DGWA-70A	Total Radium Calculation	362817		
2622482002	DGWA-71	Total Radium Calculation	362817		
2622482003	FB-1	Total Radium Calculation	362817		

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A
Required Client Information:
 Company: Georgia Power - Coal Combustion Residuals
 Address: 2480 Maner Road, Atlanta, GA 30339
 Email: jbrahram@southernco.com
 Phone: (404)506-7239 Fax:
 Requested Due Date: Standard TAT


Section B
Required Project Information:
 Report To: Jiju Abraham
 Copy To: Golder
 Purchase Order #: SCS10382775
 Project Name: Plant McDonough Background
 Project #: 168849618

Section C
Invoice Information:
 Attention: scsvoices@southernco.com
 Company Name:
 Address:
 Pace Quota:
 Pace Project Manager: betsy.mcdaniel@pacelabs.com.
 Pace Profile #: 3327.2

Regulatory Agency:
State / Location: GA

ITEM #	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE		TIME	SAMPLER TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved - Ice	Preservatives						Metals App IV	Fluoride by 300.0	Radum 226/228	Residual Chlorine (Y/N)
			DATE	TIME					H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol				
1	DGWA 70A	G	8/27/2019	1020		4	X		X						X			
2	DGWA 71	G	8/27/2019	1510		4	X		X						X			
3	FB-1	G	8/27/2019	1030		4	X		X						X			
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		

WO#: 2622482



RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	TEMP in C	Received on Ice (Y/N)	Custody Sealed (Y/N)	Cooler (Y/N)	Samples Intact (Y/N)
<i>Y. Z. ...</i>	8/28/19	908	<i>S. ...</i>	8.28.17	0908					
<i>Golder</i>			<i>A. Dalman</i>	8/28/19	1001					
<i>S. ...</i>	8.28.19	1001								

* Metals = Hg, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Ti



Sample Condition Upon Receipt

Client Name: GAPower

Project # _____

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____
Tracking #: _____

WO#: **2622482**

PM: BM Due Date: 09/26/19
CLIENT: GAPower-CCR

Custody Seal on Cooler/Box Present: yes no Seals intact: yes

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used 83 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temperature 0.8 Biological Tissue is Frozen: Yes No
Temp should be above freezing to 6°C

Date and Initials of person examining contents: 8/28/19 MK

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.	
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.	
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.	
Sampler Name & Signature on COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.	
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.	
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.	
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.	
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.	
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.	
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.	
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.	
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.	
-Includes date/time/ID/Analysis Matrix: <u>W</u>			
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed	Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.	
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.	
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.	
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A		
Pace Trip Blank Lot # (if purchased): _____			

Client Notification/ Resolution: _____ Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

December 30, 2019

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

RE: Project: Plant McDonough AP-1
Pace Project No.: 2622587

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on August 29, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kevin Herring for
Betsy McDaniel
betsy.mcdaniel@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: Daniela Herrera, Golder
Ben Hodges, Georgia Power
Jimmy Jones, Golder Associates Inc.
Kristen Jurinko
Julie Lehrman, Golder Associates Inc.
Dawn Prell, Golder Associates Inc.
Tim Richards, Golder Associates - Atlanta
Rebecca Thornton, Pace Analytical Atlanta



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Plant McDonough AP-1

Pace Project No.: 2622587

Pace Analytical Services Atlanta

110 Technology Parkway Peachtree Corners, GA 30092

Florida DOH Certification #: E87315

Georgia DW Inorganics Certification #: 812

Georgia DW Microbiology Certification #: 812

North Carolina Certification #: 381

South Carolina Certification #: 98011001

Virginia Certification #: 460204

Pace Analytical Services Asheville

2225 Riverside Drive, Asheville, NC 28804

Florida/NELAP Certification #: E87648

Massachusetts Certification #: M-NC030

North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40

South Carolina Certification #: 99030001

Virginia/VELAP Certification #: 460222

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Plant McDonough AP-1

Pace Project No.: 2622587

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622587001	DGWC-37	Water	08/28/19 10:00	08/29/19 12:50
2622587002	DGWC-38	Water	08/28/19 11:25	08/29/19 12:50
2622587003	DGWC-39	Water	08/28/19 13:40	08/29/19 12:50
2622587004	DGWC-40	Water	08/28/19 15:15	08/29/19 12:50
2622587005	DGWC-67	Water	08/28/19 15:00	08/29/19 12:50
2622587006	DGWC-68A	Water	08/28/19 13:45	08/29/19 12:50
2622587007	DGWC-69	Water	08/28/19 12:00	08/29/19 12:50
2622587008	FD-2	Water	08/28/19 00:00	08/29/19 12:50

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SAMPLE ANALYTE COUNT

Project: Plant McDonough AP-1
Pace Project No.: 2622587

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2622587001	DGWC-37	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	BRJ	1	PASI-A
2622587002	DGWC-38	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	BRJ	1	PASI-A
2622587003	DGWC-39	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	BRJ	1	PASI-A
2622587004	DGWC-40	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	BRJ	1	PASI-A
2622587005	DGWC-67	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	BRJ	1	PASI-A
2622587006	DGWC-68A	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	BRJ	1	PASI-A
2622587007	DGWC-69	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	BRJ	1	PASI-A
2622587008	FD-2	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	BRJ	1	PASI-A

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant McDonough AP-1
Pace Project No.: 2622587

Sample: DGWC-37		Lab ID: 2622587001		Collected: 08/28/19 10:00		Received: 08/29/19 12:50		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/05/19 19:42	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/05/19 19:42	7440-38-2		
Barium	0.086	mg/L	0.010	0.00049	1	08/30/19 16:08	09/05/19 19:42	7440-39-3		
Beryllium	0.000086J	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/05/19 19:42	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/05/19 19:42	7440-43-9		
Chromium	ND	mg/L	0.010	0.00039	1	08/30/19 16:08	09/05/19 19:42	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/05/19 19:42	7440-48-4		
Lead	0.000061J	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/05/19 19:42	7439-92-1		
Lithium	0.0025J	mg/L	0.030	0.00078	1	08/30/19 16:08	09/05/19 19:42	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/05/19 19:42	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/30/19 16:08	09/05/19 19:42	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/05/19 19:42	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/05/19 09:07	09/05/19 13:01	7439-97-6		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	0.074J	mg/L	0.10	0.050	1		09/07/19 15:40	16984-48-8		

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ANALYTICAL RESULTS

Project: Plant McDonough AP-1

Pace Project No.: 2622587

Sample: DGWC-38		Lab ID: 2622587002		Collected: 08/28/19 11:25		Received: 08/29/19 12:50		Matrix: Water	
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/05/19 19:48	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/05/19 19:48	7440-38-2	
Barium	0.033	mg/L	0.010	0.00049	1	08/30/19 16:08	09/05/19 19:48	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/05/19 19:48	7440-41-7	
Cadmium	0.00030J	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/05/19 19:48	7440-43-9	
Chromium	ND	mg/L	0.010	0.00039	1	08/30/19 16:08	09/05/19 19:48	7440-47-3	
Cobalt	0.0016J	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/05/19 19:48	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/05/19 19:48	7439-92-1	
Lithium	0.0034J	mg/L	0.030	0.00078	1	08/30/19 16:08	09/05/19 19:48	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/05/19 19:48	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	08/30/19 16:08	09/05/19 19:48	7782-49-2	
Thallium	0.00014J	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/05/19 19:48	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	09/05/19 09:07	09/05/19 13:11	7439-97-6	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0 Rev 2.1 1993							
Fluoride	0.066J	mg/L	0.10	0.050	1		09/07/19 15:56	16984-48-8	

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ANALYTICAL RESULTS

Project: Plant McDonough AP-1
Pace Project No.: 2622587

Sample: DGWC-39		Lab ID: 2622587003		Collected: 08/28/19 13:40		Received: 08/29/19 12:50		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/05/19 19:53	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/05/19 19:53	7440-38-2		
Barium	0.099	mg/L	0.010	0.00049	1	08/30/19 16:08	09/05/19 19:53	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/05/19 19:53	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/05/19 19:53	7440-43-9		
Chromium	ND	mg/L	0.010	0.00039	1	08/30/19 16:08	09/05/19 19:53	7440-47-3		
Cobalt	0.0067	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/05/19 19:53	7440-48-4		
Lead	0.00080J	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/05/19 19:53	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	08/30/19 16:08	09/05/19 19:53	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/05/19 19:53	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/30/19 16:08	09/05/19 19:53	7782-49-2		
Thallium	0.00069J	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/05/19 19:53	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/05/19 09:07	09/05/19 13:13	7439-97-6		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	0.086J	mg/L	0.10	0.050	1		09/07/19 16:12	16984-48-8		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant McDonough AP-1
Pace Project No.: 2622587

Sample: DGWC-40		Lab ID: 2622587004		Collected: 08/28/19 15:15		Received: 08/29/19 12:50		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/05/19 19:59	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/05/19 19:59	7440-38-2		
Barium	0.017	mg/L	0.010	0.00049	1	08/30/19 16:08	09/05/19 19:59	7440-39-3		
Beryllium	0.0032	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/05/19 19:59	7440-41-7		
Cadmium	0.00087J	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/05/19 19:59	7440-43-9		
Chromium	0.00061J	mg/L	0.010	0.00039	1	08/30/19 16:08	09/05/19 19:59	7440-47-3		
Cobalt	0.044	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/05/19 19:59	7440-48-4		
Lead	0.00081J	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/05/19 19:59	7439-92-1		
Lithium	0.0022J	mg/L	0.030	0.00078	1	08/30/19 16:08	09/05/19 19:59	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/05/19 19:59	7439-98-7		
Selenium	0.0017J	mg/L	0.010	0.0013	1	08/30/19 16:08	09/05/19 19:59	7782-49-2		
Thallium	0.000070J	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/05/19 19:59	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/05/19 09:07	09/05/19 13:16	7439-97-6		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	0.14	mg/L	0.10	0.050	1		09/07/19 16:27	16984-48-8		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant McDonough AP-1
Pace Project No.: 2622587

Sample: DGWC-67		Lab ID: 2622587005		Collected: 08/28/19 15:00		Received: 08/29/19 12:50		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/05/19 20:05	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/05/19 20:05	7440-38-2		
Barium	0.11	mg/L	0.010	0.00049	1	08/30/19 16:08	09/05/19 20:05	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/05/19 20:05	7440-41-7		
Cadmium	0.00017J	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/05/19 20:05	7440-43-9		
Chromium	ND	mg/L	0.010	0.00039	1	08/30/19 16:08	09/05/19 20:05	7440-47-3		
Cobalt	0.0013J	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/05/19 20:05	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/05/19 20:05	7439-92-1		
Lithium	0.0046J	mg/L	0.030	0.00078	1	08/30/19 16:08	09/05/19 20:05	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/05/19 20:05	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/30/19 16:08	09/05/19 20:05	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/05/19 20:05	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/05/19 09:07	09/05/19 13:23	7439-97-6		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	ND	mg/L	0.10	0.050	1		09/07/19 16:42	16984-48-8		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant McDonough AP-1
Pace Project No.: 2622587

Sample: DGWC-68A		Lab ID: 2622587006		Collected: 08/28/19 13:45		Received: 08/29/19 12:50		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/05/19 20:22	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/05/19 20:22	7440-38-2		
Barium	0.089	mg/L	0.010	0.00049	1	08/30/19 16:08	09/05/19 20:22	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/05/19 20:22	7440-41-7		
Cadmium	0.00017J	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/05/19 20:22	7440-43-9		
Chromium	ND	mg/L	0.010	0.00039	1	08/30/19 16:08	09/05/19 20:22	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/05/19 20:22	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/05/19 20:22	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	08/30/19 16:08	09/05/19 20:22	7439-93-2		
Molybdenum	0.21	mg/L	0.010	0.00095	1	08/30/19 16:08	09/05/19 20:22	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/30/19 16:08	09/05/19 20:22	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/05/19 20:22	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/05/19 09:07	09/05/19 13:25	7439-97-6		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	0.10	mg/L	0.10	0.050	1		09/07/19 17:29	16984-48-8		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant McDonough AP-1
Pace Project No.: 2622587

Sample: DGWC-69		Lab ID: 2622587007		Collected: 08/28/19 12:00		Received: 08/29/19 12:50		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/05/19 20:28	7440-36-0	
Arsenic	0.025	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/05/19 20:28	7440-38-2	
Barium	0.061	mg/L	0.010	0.00049	1	08/30/19 16:08	09/05/19 20:28	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/05/19 20:28	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/05/19 20:28	7440-43-9	
Chromium	0.00049J	mg/L	0.010	0.00039	1	08/30/19 16:08	09/05/19 20:28	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/05/19 20:28	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/05/19 20:28	7439-92-1	
Lithium	0.0024J	mg/L	0.030	0.00078	1	08/30/19 16:08	09/05/19 20:28	7439-93-2	
Molybdenum	0.0059J	mg/L	0.010	0.00095	1	08/30/19 16:08	09/05/19 20:28	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	08/30/19 16:08	09/05/19 20:28	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/05/19 20:28	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	09/05/19 09:07	09/05/19 13:27	7439-97-6	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0 Rev 2.1 1993							
Fluoride	0.070J	mg/L	0.10	0.050	1		09/07/19 17:44	16984-48-8	

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ANALYTICAL RESULTS

Project: Plant McDonough AP-1
Pace Project No.: 2622587

Sample: FD-2		Lab ID: 2622587008		Collected: 08/28/19 00:00	Received: 08/29/19 12:50	Matrix: Water				
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/05/19 20:34	7440-36-0		
Arsenic	0.025	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/05/19 20:34	7440-38-2		
Barium	0.061	mg/L	0.010	0.00049	1	08/30/19 16:08	09/05/19 20:34	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/05/19 20:34	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/05/19 20:34	7440-43-9		
Chromium	0.00055J	mg/L	0.010	0.00039	1	08/30/19 16:08	09/05/19 20:34	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/05/19 20:34	7440-48-4		
Lead	0.00016J	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/05/19 20:34	7439-92-1		
Lithium	0.0023J	mg/L	0.030	0.00078	1	08/30/19 16:08	09/05/19 20:34	7439-93-2		
Molybdenum	0.0057J	mg/L	0.010	0.00095	1	08/30/19 16:08	09/05/19 20:34	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/30/19 16:08	09/05/19 20:34	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/05/19 20:34	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/05/19 09:07	09/05/19 13:30	7439-97-6		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	0.069J	mg/L	0.10	0.050	1		09/07/19 18:00	16984-48-8		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant McDonough AP-1

Pace Project No.: 2622587

QC Batch: 34720 Analysis Method: EPA 7470A
 QC Batch Method: EPA 7470A Analysis Description: 7470 Mercury
 Associated Lab Samples: 2622587001, 2622587002, 2622587003, 2622587004, 2622587005, 2622587006, 2622587007, 2622587008

METHOD BLANK: 156270 Matrix: Water
 Associated Lab Samples: 2622587001, 2622587002, 2622587003, 2622587004, 2622587005, 2622587006, 2622587007, 2622587008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	09/05/19 12:57	

LABORATORY CONTROL SAMPLE: 156271

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0025	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 156272 156273

Parameter	Units	156272		156273		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2622587001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Mercury	mg/L	ND	0.0025	0.0025	0.0023	0.0023	91	92	75-125	2	20

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QUALITY CONTROL DATA

Project: Plant McDonough AP-1
Pace Project No.: 2622587

QC Batch: 34572 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2622587001, 2622587002, 2622587003, 2622587004, 2622587005, 2622587006, 2622587007, 2622587008

METHOD BLANK: 155685 Matrix: Water
Associated Lab Samples: 2622587001, 2622587002, 2622587003, 2622587004, 2622587005, 2622587006, 2622587007, 2622587008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	09/05/19 17:36	
Arsenic	mg/L	ND	0.0050	0.00035	09/05/19 17:36	
Barium	mg/L	ND	0.010	0.00049	09/05/19 17:36	
Beryllium	mg/L	ND	0.0030	0.000074	09/05/19 17:36	
Cadmium	mg/L	ND	0.0025	0.00011	09/05/19 17:36	
Chromium	mg/L	ND	0.010	0.00039	09/05/19 17:36	
Cobalt	mg/L	ND	0.0050	0.00030	09/05/19 17:36	
Lead	mg/L	ND	0.0050	0.000046	09/05/19 17:36	
Lithium	mg/L	ND	0.030	0.00078	09/05/19 17:36	
Molybdenum	mg/L	ND	0.010	0.00095	09/05/19 17:36	
Selenium	mg/L	ND	0.010	0.0013	09/05/19 17:36	
Thallium	mg/L	ND	0.0010	0.000052	09/05/19 17:36	

LABORATORY CONTROL SAMPLE: 155686

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.11	108	80-120	
Arsenic	mg/L	0.1	0.097	97	80-120	
Barium	mg/L	0.1	0.10	103	80-120	
Beryllium	mg/L	0.1	0.097	97	80-120	
Cadmium	mg/L	0.1	0.099	99	80-120	
Chromium	mg/L	0.1	0.10	100	80-120	
Cobalt	mg/L	0.1	0.10	101	80-120	
Lead	mg/L	0.1	0.099	99	80-120	
Lithium	mg/L	0.1	0.10	100	80-120	
Molybdenum	mg/L	0.1	0.10	104	80-120	
Selenium	mg/L	0.1	0.097	97	80-120	
Thallium	mg/L	0.1	0.099	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155687 155688

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		2622579008 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
Antimony	mg/L	ND	0.1	0.1	0.10	0.11	104	106	75-125	2	20	
Arsenic	mg/L	ND	0.1	0.1	0.099	0.097	99	97	75-125	2	20	
Barium	mg/L	0.17	0.1	0.1	0.25	0.27	84	96	75-125	4	20	
Beryllium	mg/L	0.00022J	0.1	0.1	0.094	0.095	94	95	75-125	1	20	
Cadmium	mg/L	ND	0.1	0.1	0.098	0.097	98	97	75-125	1	20	

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QUALITY CONTROL DATA

Project: Plant McDonough AP-1

Pace Project No.: 2622587

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155687		155688		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		2622579008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							
Chromium	mg/L	0.00089J	0.1	0.1	0.096	0.099	95	98	75-125	2	20	
Cobalt	mg/L	0.00099J	0.1	0.1	0.096	0.097	95	96	75-125	1	20	
Lead	mg/L	0.000061J	0.1	0.1	0.096	0.098	96	98	75-125	2	20	
Lithium	mg/L	0.0018J	0.1	0.1	0.097	0.098	95	96	75-125	1	20	
Molybdenum	mg/L	ND	0.1	0.1	0.10	0.10	100	103	75-125	3	20	
Selenium	mg/L	ND	0.1	0.1	0.098	0.095	98	95	75-125	3	20	
Thallium	mg/L	ND	0.1	0.1	0.095	0.098	95	98	75-125	3	20	

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QUALITY CONTROL DATA

Project: Plant McDonough AP-1

Pace Project No.: 2622587

QC Batch: 496582 Analysis Method: EPA 300.0 Rev 2.1 1993
 QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions
 Associated Lab Samples: 2622587001, 2622587002, 2622587003, 2622587004, 2622587005, 2622587006, 2622587007, 2622587008

METHOD BLANK: 2674477 Matrix: Water
 Associated Lab Samples: 2622587001, 2622587002, 2622587003, 2622587004, 2622587005, 2622587006, 2622587007, 2622587008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.10	0.050	09/07/19 12:19	

LABORATORY CONTROL SAMPLE: 2674478

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.7	109	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2674479 2674480

Parameter	Units	2622657001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	ND	2.5	2.5	ND	ND	0	0	90-110		10 M1	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2674481 2674482

Parameter	Units	2622587005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	ND	2.5	2.5	2.7	2.8	108	108	90-110	0	10	

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QUALIFIERS

Project: Plant McDonough AP-1

Pace Project No.: 2622587

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-A Pace Analytical Services - Asheville

PASI-GA Pace Analytical Services - Atlanta, GA

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant McDonough AP-1
Pace Project No.: 2622587

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622587001	DGWC-37	EPA 3005A	34572	EPA 6020B	34602
2622587002	DGWC-38	EPA 3005A	34572	EPA 6020B	34602
2622587003	DGWC-39	EPA 3005A	34572	EPA 6020B	34602
2622587004	DGWC-40	EPA 3005A	34572	EPA 6020B	34602
2622587005	DGWC-67	EPA 3005A	34572	EPA 6020B	34602
2622587006	DGWC-68A	EPA 3005A	34572	EPA 6020B	34602
2622587007	DGWC-69	EPA 3005A	34572	EPA 6020B	34602
2622587008	FD-2	EPA 3005A	34572	EPA 6020B	34602
2622587001	DGWC-37	EPA 7470A	34720	EPA 7470A	34792
2622587002	DGWC-38	EPA 7470A	34720	EPA 7470A	34792
2622587003	DGWC-39	EPA 7470A	34720	EPA 7470A	34792
2622587004	DGWC-40	EPA 7470A	34720	EPA 7470A	34792
2622587005	DGWC-67	EPA 7470A	34720	EPA 7470A	34792
2622587006	DGWC-68A	EPA 7470A	34720	EPA 7470A	34792
2622587007	DGWC-69	EPA 7470A	34720	EPA 7470A	34792
2622587008	FD-2	EPA 7470A	34720	EPA 7470A	34792
2622587001	DGWC-37	EPA 300.0 Rev 2.1 1993	496582		
2622587002	DGWC-38	EPA 300.0 Rev 2.1 1993	496582		
2622587003	DGWC-39	EPA 300.0 Rev 2.1 1993	496582		
2622587004	DGWC-40	EPA 300.0 Rev 2.1 1993	496582		
2622587005	DGWC-67	EPA 300.0 Rev 2.1 1993	496582		
2622587006	DGWC-68A	EPA 300.0 Rev 2.1 1993	496582		
2622587007	DGWC-69	EPA 300.0 Rev 2.1 1993	496582		
2622587008	FD-2	EPA 300.0 Rev 2.1 1993	496582		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

Client Name: GA Power

Project # _____

WO#: **2622587**

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Tracking #: _____

PM: BM Due Date: **09/06/19**

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

CLIENT: **GA Power-CCR**

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used 83 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temperature 2.0 Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 8/29/19 MK

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
		Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: _____ Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

September 24, 2019

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

RE: Project: Plant McDonough AP-1
Pace Project No.: 2622588

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on August 29, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Betsy McDaniel
betsy.mcdaniel@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: Ben Hodges, Georgia Power
Kristen Jurinko, Golder Associates Inc.
Julie Lehrman, Golder Associates Inc.
Dawn Prell, Golder Associates Inc.
Tim Richards, Golder Associates - Atlanta
Rebecca Thornton, Pace Analytical Atlanta



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Plant McDonough AP-1
Pace Project No.: 2622588

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991

Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: Plant McDonough AP-1

Pace Project No.: 2622588

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622588001	DGWC-37	Water	08/28/19 10:00	08/29/19 12:50
2622588002	DGWC-38	Water	08/28/19 11:25	08/29/19 12:50
2622588003	DGWC-39	Water	08/28/19 13:40	08/29/19 12:50
2622588004	DGWC-40	Water	08/28/19 15:15	08/29/19 12:50
2622588005	DGWC-67	Water	08/28/19 15:00	08/29/19 12:50
2622588006	DGWC-68A	Water	08/28/19 13:45	08/29/19 12:50
2622588007	DGWC-69	Water	08/28/19 12:00	08/29/19 12:50
2622588008	FD-2	Water	08/28/19 00:00	08/29/19 12:50

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SAMPLE ANALYTE COUNT

Project: Plant McDonough AP-1

Pace Project No.: 2622588

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2622588001	DGWC-37	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622588002	DGWC-38	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622588003	DGWC-39	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622588004	DGWC-40	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622588005	DGWC-67	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622588006	DGWC-68A	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622588007	DGWC-69	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622588008	FD-2	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McDonough AP-1

Pace Project No.: 2622588

Sample: DGWC-37		Lab ID: 2622588001	Collected: 08/28/19 10:00	Received: 08/29/19 12:50	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.508 ± 0.285 (0.394)		pCi/L	09/13/19 14:32	13982-63-3	
		C:84% T:NA					
Radium-228	EPA 9320	0.736 ± 0.471 (0.911)		pCi/L	09/19/19 11:59	15262-20-1	
		C:73% T:84%					
Total Radium	Total Radium Calculation	1.24 ± 0.756 (1.31)		pCi/L	09/23/19 11:58	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McDonough AP-1

Pace Project No.: 2622588

Sample: DGWC-38 **Lab ID: 2622588002** Collected: 08/28/19 11:25 Received: 08/29/19 12:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.517 ± 0.297 (0.411) C:91% T:NA	pCi/L	09/13/19 09:00	13982-63-3	
Radium-228	EPA 9320	-0.0409 ± 0.453 (1.04) C:71% T:83%	pCi/L	09/19/19 11:59	15262-20-1	
Total Radium	Total Radium Calculation	0.517 ± 0.750 (1.45)	pCi/L	09/23/19 11:59	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McDonough AP-1

Pace Project No.: 2622588

Sample: DGWC-39 **Lab ID: 2622588003** Collected: 08/28/19 13:40 Received: 08/29/19 12:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.396 ± 0.250 (0.366) C:97% T:NA	pCi/L	09/13/19 09:00	13982-63-3	
Radium-228	EPA 9320	0.754 ± 0.444 (0.826) C:71% T:90%	pCi/L	09/19/19 15:49	15262-20-1	
Total Radium	Total Radium Calculation	1.15 ± 0.694 (1.19)	pCi/L	09/23/19 11:59	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McDonough AP-1

Pace Project No.: 2622588

Sample: DGWC-40 **Lab ID: 2622588004** Collected: 08/28/19 15:15 Received: 08/29/19 12:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.403 ± 0.262 (0.369) C:87% T:NA	pCi/L	09/13/19 09:00	13982-63-3	
Radium-228	EPA 9320	0.189 ± 0.443 (0.982) C:71% T:80%	pCi/L	09/19/19 15:17	15262-20-1	
Total Radium	Total Radium Calculation	0.592 ± 0.705 (1.35)	pCi/L	09/23/19 11:59	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McDonough AP-1

Pace Project No.: 2622588

Sample: DGWC-67 **Lab ID: 2622588005** Collected: 08/28/19 15:00 Received: 08/29/19 12:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.540 ± 0.323 (0.485) C:87% T:NA	pCi/L	09/13/19 09:00	13982-63-3	
Radium-228	EPA 9320	0.211 ± 0.388 (0.850) C:69% T:81%	pCi/L	09/19/19 15:17	15262-20-1	
Total Radium	Total Radium Calculation	0.751 ± 0.711 (1.34)	pCi/L	09/23/19 11:59	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McDonough AP-1

Pace Project No.: 2622588

Sample: DGWC-68A **Lab ID: 2622588006** Collected: 08/28/19 13:45 Received: 08/29/19 12:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.635 ± 0.345 (0.519) C:90% T:NA	pCi/L	09/13/19 09:00	13982-63-3	
Radium-228	EPA 9320	1.13 ± 0.478 (0.771) C:67% T:90%	pCi/L	09/19/19 15:16	15262-20-1	
Total Radium	Total Radium Calculation	1.77 ± 0.823 (1.29)	pCi/L	09/23/19 11:59	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McDonough AP-1

Pace Project No.: 2622588

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	1.14 ± 0.412 (0.337) C:95% T:NA	pCi/L	09/13/19 09:00	13982-63-3	
Radium-228	EPA 9320	0.236 ± 0.426 (0.932) C:73% T:83%	pCi/L	09/19/19 11:59	15262-20-1	
Total Radium	Total Radium Calculation	1.38 ± 0.838 (1.27)	pCi/L	09/23/19 11:59	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McDonough AP-1

Pace Project No.: 2622588

Sample: FD-2 **Lab ID: 2622588008** Collected: 08/28/19 00:00 Received: 08/29/19 12:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.985 ± 0.387 (0.376) C:90% T:NA	pCi/L	09/13/19 09:00	13982-63-3	
Radium-228	EPA 9320	0.464 ± 0.394 (0.776) C:76% T:80%	pCi/L	09/19/19 14:33	15262-20-1	
Total Radium	Total Radium Calculation	1.45 ± 0.781 (1.15)	pCi/L	09/23/19 11:58	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant McDonough AP-1

Pace Project No.: 2622588

QC Batch:	359955	Analysis Method:	EPA 9315
QC Batch Method:	EPA 9315	Analysis Description:	9315 Total Radium
Associated Lab Samples:	2622588001, 2622588002, 2622588003, 2622588004, 2622588005, 2622588006, 2622588007, 2622588008		

METHOD BLANK:	1747367	Matrix:	Water
Associated Lab Samples:	2622588001, 2622588002, 2622588003, 2622588004, 2622588005, 2622588006, 2622588007, 2622588008		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.428 ± 0.255 (0.325) C:92% T:NA	pCi/L	09/13/19 09:00	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant McDonough AP-1

Pace Project No.: 2622588

QC Batch: 359957

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2622588001, 2622588002, 2622588003, 2622588004, 2622588005, 2622588006, 2622588007, 2622588008

METHOD BLANK: 1747374

Matrix: Water

Associated Lab Samples: 2622588001, 2622588002, 2622588003, 2622588004, 2622588005, 2622588006, 2622588007, 2622588008

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.461 ± 0.411 (0.833) C:71% T:76%	pCi/L	09/19/19 12:11	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALIFIERS

Project: Plant McDonough AP-1

Pace Project No.: 2622588

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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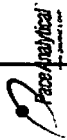
QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant McDonough AP-1
Pace Project No.: 2622588

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622588001	DGWC-37	EPA 9315	359955		
2622588002	DGWC-38	EPA 9315	359955		
2622588003	DGWC-39	EPA 9315	359955		
2622588004	DGWC-40	EPA 9315	359955		
2622588005	DGWC-67	EPA 9315	359955		
2622588006	DGWC-68A	EPA 9315	359955		
2622588007	DGWC-69	EPA 9315	359955		
2622588008	FD-2	EPA 9315	359955		
2622588001	DGWC-37	EPA 9320	359957		
2622588002	DGWC-38	EPA 9320	359957		
2622588003	DGWC-39	EPA 9320	359957		
2622588004	DGWC-40	EPA 9320	359957		
2622588005	DGWC-67	EPA 9320	359957		
2622588006	DGWC-68A	EPA 9320	359957		
2622588007	DGWC-69	EPA 9320	359957		
2622588008	FD-2	EPA 9320	359957		
2622588001	DGWC-37	Total Radium Calculation	362616		
2622588002	DGWC-38	Total Radium Calculation	362617		
2622588003	DGWC-39	Total Radium Calculation	362617		
2622588004	DGWC-40	Total Radium Calculation	362617		
2622588005	DGWC-67	Total Radium Calculation	362617		
2622588006	DGWC-68A	Total Radium Calculation	362617		
2622588007	DGWC-69	Total Radium Calculation	362617		
2622588008	FD-2	Total Radium Calculation	362616		

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A		Section B		Section C	
Required Client Information:		Required Project Information:		Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Johi Abraham	Attention:	scsinvoices@southernco.com
Address:	2460 Manier Road Atlanta, GA 30339	Copy To:	Goldier	Company Name:	
Email:	jabraham@southernco.com	Purchase Order #:	SCS10382775	Address:	
Phone:	(404)506-7239	Project Name:	Plant McDonough AP-1	Pace Project Manager:	betsy.mcdaniel@paciabels.com
Requested Due Date:	Standard TAT	Project #:	166849618	Pace Profile #:	332.7.2
				Regulatory/Agency:	
				State/Location:	GA

ITEM #	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE		TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	PRESERVATIVES							ANALYSES TEST Y/N	Requested Analysis Filtered (Y/N)	Residuals (Y/N)	Extra Radium
			DATE	TIME				H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other				
1	DGWC-37	WT	G	8/28/2019	1000		6	X	X						X	X		
2	DGWC-38	WT	G	8/28/2019	1125		4	X	X						X	X		
3	DGWC-39	WT	G	8/28/2019	1340		4	X	X						X	X		
4	DGWC-40	WT	G	8/28/2019	1515		4	X	X						X	X		
5	DGWC-67	WT	G	8/28/2019	1500		4	X	X						X	X		
6	DGWC-68A	WT	G	8/28/2019	1345		4	X	X						X	X		
7	DGWC-69	WT	G	8/28/2019	1200		4	X	X						X	X		
8	FD-2	WT	G	8/28/2019	--		4	X	X						X	X		
9																		
10																		
11																		
12																		

WO#: 2622588

2622588

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION		DATE	TIME	SAMPLE CONDITIONS										
				DATE	TIME			Received on	Ice (Y/N)	Custody (Y/N)	Sealed / Cooler (Y/N)	Samples Intact (Y/N)						
	<i>J. M. Bhatt</i> Goldier	8-29-19		<i>M. Bhatt</i>		8-29-19	10:30											
				<i>Charles G. ...</i>		8/29/19	12:50											



Sample Condition Upon Receipt

Client Name: GIA Power

Project # _____

Courier: Fed Ex UPS USPS Client Commercial Pace Other
Tracking #: _____

WO#: 2622588

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

PM: BM Due Date: 09/27/19
CLIENT: GAPower-CCR

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used 83 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temperature 2.0 Biological Tissue is Frozen: Yes No

Date and initials of person examining contents: 8/29/19 ml

Temp should be above freezing to 6°C

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix:	<u>W</u>	
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
		Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):	_____	

Client Notification/ Resolution: _____ Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

December 30, 2019

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

RE: Project: Plant McDonough Background
Pace Project No.: 2622589

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on August 29, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kevin Herring for
Betsy McDaniel
betsy.mcdaniel@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: Daniela Herrera, Golder
Ben Hodges, Georgia Power
Jimmy Jones, Golder Associates Inc.
Kristen Jurinko
Julie Lehrman, Golder Associates Inc.
Dawn Prell, Golder Associates Inc.
Tim Richards, Golder Associates - Atlanta
Rebecca Thornton, Pace Analytical Atlanta



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Plant McDonough Background

Pace Project No.: 2622589

Pace Analytical Services Atlanta

110 Technology Parkway Peachtree Corners, GA 30092

Florida DOH Certification #: E87315

Georgia DW Inorganics Certification #: 812

Georgia DW Microbiology Certification #: 812

North Carolina Certification #: 381

South Carolina Certification #: 98011001

Virginia Certification #: 460204

Pace Analytical Services Asheville

2225 Riverside Drive, Asheville, NC 28804

Florida/NELAP Certification #: E87648

Massachusetts Certification #: M-NC030

North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40

South Carolina Certification #: 99030001

Virginia/VELAP Certification #: 460222

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Plant McDonough Background

Pace Project No.: 2622589

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622589001	DGWA-53	Water	08/28/19 15:55	08/29/19 12:50

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Plant McDonough Background

Pace Project No.: 2622589

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2622589001	DGWA-53	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	BRJ	1	PASI-A

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant McDonough Background
Pace Project No.: 2622589

Sample: DGWA-53		Lab ID: 2622589001		Collected: 08/28/19 15:55		Received: 08/29/19 12:50		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/05/19 20:39	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/05/19 20:39	7440-38-2		
Barium	0.087	mg/L	0.010	0.00049	1	08/30/19 16:08	09/05/19 20:39	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/05/19 20:39	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/05/19 20:39	7440-43-9		
Chromium	ND	mg/L	0.010	0.00039	1	08/30/19 16:08	09/05/19 20:39	7440-47-3		
Cobalt	0.013	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/05/19 20:39	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/05/19 20:39	7439-92-1		
Lithium	0.0092J	mg/L	0.030	0.00078	1	08/30/19 16:08	09/05/19 20:39	7439-93-2		
Molybdenum	0.031	mg/L	0.010	0.00095	1	08/30/19 16:08	09/05/19 20:39	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/30/19 16:08	09/05/19 20:39	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/05/19 20:39	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/05/19 09:07	09/05/19 13:32	7439-97-6		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	0.42	mg/L	0.10	0.050	1		09/07/19 13:36	16984-48-8		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant McDonough Background

Pace Project No.: 2622589

QC Batch: 34720	Analysis Method: EPA 7470A
QC Batch Method: EPA 7470A	Analysis Description: 7470 Mercury
Associated Lab Samples: 2622589001	

METHOD BLANK: 156270 Matrix: Water
Associated Lab Samples: 2622589001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	09/05/19 12:57	

LABORATORY CONTROL SAMPLE: 156271

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0025	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 156272 156273

Parameter	Units	156272		156273		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2622587001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Mercury	mg/L	ND	0.0025	0.0025	0.0023	0.0023	91	92	75-125	2	20

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant McDonough Background
Pace Project No.: 2622589

QC Batch: 34572 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2622589001

METHOD BLANK: 155685 Matrix: Water
Associated Lab Samples: 2622589001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	09/05/19 17:36	
Arsenic	mg/L	ND	0.0050	0.00035	09/05/19 17:36	
Barium	mg/L	ND	0.010	0.00049	09/05/19 17:36	
Beryllium	mg/L	ND	0.0030	0.000074	09/05/19 17:36	
Cadmium	mg/L	ND	0.0025	0.00011	09/05/19 17:36	
Chromium	mg/L	ND	0.010	0.00039	09/05/19 17:36	
Cobalt	mg/L	ND	0.0050	0.00030	09/05/19 17:36	
Lead	mg/L	ND	0.0050	0.000046	09/05/19 17:36	
Lithium	mg/L	ND	0.030	0.00078	09/05/19 17:36	
Molybdenum	mg/L	ND	0.010	0.00095	09/05/19 17:36	
Selenium	mg/L	ND	0.010	0.0013	09/05/19 17:36	
Thallium	mg/L	ND	0.0010	0.000052	09/05/19 17:36	

LABORATORY CONTROL SAMPLE: 155686

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.11	108	80-120	
Arsenic	mg/L	0.1	0.097	97	80-120	
Barium	mg/L	0.1	0.10	103	80-120	
Beryllium	mg/L	0.1	0.097	97	80-120	
Cadmium	mg/L	0.1	0.099	99	80-120	
Chromium	mg/L	0.1	0.10	100	80-120	
Cobalt	mg/L	0.1	0.10	101	80-120	
Lead	mg/L	0.1	0.099	99	80-120	
Lithium	mg/L	0.1	0.10	100	80-120	
Molybdenum	mg/L	0.1	0.10	104	80-120	
Selenium	mg/L	0.1	0.097	97	80-120	
Thallium	mg/L	0.1	0.099	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155687 155688

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		2622579008	Spike Conc.	Spike Conc.	MS Result							MSD Result
Antimony	mg/L	ND	0.1	0.1	0.10	0.11	104	106	75-125	2	20	
Arsenic	mg/L	ND	0.1	0.1	0.099	0.097	99	97	75-125	2	20	
Barium	mg/L	0.17	0.1	0.1	0.25	0.27	84	96	75-125	4	20	
Beryllium	mg/L	0.00022J	0.1	0.1	0.094	0.095	94	95	75-125	1	20	
Cadmium	mg/L	ND	0.1	0.1	0.098	0.097	98	97	75-125	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant McDonough Background

Pace Project No.: 2622589

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155687		155688		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		2622579008 Result	MS Spike Conc.	MSD Spike Conc.								
Chromium	mg/L	0.00089J	0.1	0.1	0.096	0.099	95	98	75-125	2	20	
Cobalt	mg/L	0.00099J	0.1	0.1	0.096	0.097	95	96	75-125	1	20	
Lead	mg/L	0.000061J	0.1	0.1	0.096	0.098	96	98	75-125	2	20	
Lithium	mg/L	0.0018J	0.1	0.1	0.097	0.098	95	96	75-125	1	20	
Molybdenum	mg/L	ND	0.1	0.1	0.10	0.10	100	103	75-125	3	20	
Selenium	mg/L	ND	0.1	0.1	0.098	0.095	98	95	75-125	3	20	
Thallium	mg/L	ND	0.1	0.1	0.095	0.098	95	98	75-125	3	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant McDonough Background
Pace Project No.: 2622589

QC Batch: 496582 Analysis Method: EPA 300.0 Rev 2.1 1993
QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2622589001

METHOD BLANK: 2674477 Matrix: Water
Associated Lab Samples: 2622589001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.10	0.050	09/07/19 12:19	

LABORATORY CONTROL SAMPLE: 2674478

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.7	109	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2674479 2674480

Parameter	Units	2674479		2674480		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Fluoride	mg/L	ND	2.5	2.5	ND	ND	0	0	90-110	10	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2674481 2674482

Parameter	Units	2674481		2674482		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Fluoride	mg/L	ND	2.5	2.5	2.7	2.8	108	108	90-110	0	10

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Plant McDonough Background

Pace Project No.: 2622589

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-A Pace Analytical Services - Asheville

PASI-GA Pace Analytical Services - Atlanta, GA

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant McDonough Background

Pace Project No.: 2622589

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622589001	DGWA-53	EPA 3005A	34572	EPA 6020B	34602
2622589001	DGWA-53	EPA 7470A	34720	EPA 7470A	34792
2622589001	DGWA-53	EPA 300.0 Rev 2.1 1993	496582		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A		Section B		Section C	
Required Client Information:		Required Project Information:		Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Joju Abraham	Attention:	scsinvoices@southernco.com
Address:	2480 Maner Road Atlanta, GA 30339	Copy To:	Goldier	Company Name:	
Email:	jabraham@southernco.com	Purchase Order #:	SCS10382775	Address:	
Phone:	(404)506-7239	Project Name:	Plant McDonough Background	Pace Project Manager:	belsy.mcdaniel@pacelabs.com
Requested Due Date:	Standard TAT	Project #:	166849818	Pace Profile #:	332.7.2
Regulatory Agency		State / Location		GA	

ITEM #	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G-GRAB C-COMP)	DATE		DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS	Received on	Temp in C	Ice (Y/N)	Custody (Y/N)	Sealed (Y/N)	Cooler (Y/N)	Samples Intact (Y/N)	
			DATE	TIME														
1	DGWA-53	G	8/28/2019	1555	8-28-19	10:50	<i>Yuan</i>	8-28-19	10:50									
2							<i>Goldier</i>	8/29/19	12:00									
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		

WO#: 2622589

Requested Analysis Filtered (Y/N)	
Analyses Test	Y/N
Metals App IV	X
Fluoride by 300.0	X
Radium 226/228	X

Preservatives	
Unpreserved - Ice	X
H2SO4	X
HNO3	
HCl	
NaOH	
Na2S2O3	
Methanol	
Other	

Matrix	
Drinking Water	OWT
Water	WT
Waste Water	WW
Product	P
Soil/Sediment	SL
Oil	OL
Woo	WP
Air	AR
Other	OT
Tissue	TS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	<i>Yuan</i>	8-28-19	10:50	<i>M. BAH</i>	8-28-19	10:50	
	<i>Goldier</i>	8/29/19	12:00	<i>Chalo-offord</i>	8/29/19	12:00	

* Metals = Hg, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl



Sample Condition Upon Receipt

Client Name: GIA Power Project # _____

Courier: Fed Ex UPS USPS Client Commercial Pace Other
Tracking #: _____

WO# : 2622589

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

PM: BM Due Date: 09/06/19
CLIENT: GAPower-CCR

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used 83 Type of Ice: Wet Blue None Samples on ice, cooling process, has begun

Cooler Temperature 2.0 Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: 8/29/19 ml

Temp should be above freezing to 6°C

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
		Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: _____ Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

September 27, 2019

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

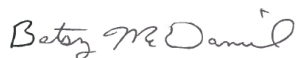
RE: Project: Plant McDonough Background
Pace Project No.: 2622590

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on August 29, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Betsy McDaniel
betsy.mcdaniel@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: Ms. Jean Brown, Georgia Power_Southern Company
Ben Hodges, Georgia Power
Kristen Jurinko, Golder Associates Inc.
Julie Lehrman, Golder Associates Inc.
Dawn Prell, Golder Associates Inc.
Tim Richards, Golder Associates - Atlanta
Rebecca Thornton, Pace Analytical Atlanta
Dominic Weatherhill, Georgia Power



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Plant McDonough Background

Pace Project No.: 2622590

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Plant McDonough Background

Pace Project No.: 2622590

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622590001	DGWA-53	Water	08/28/19 15:55	08/29/19 12:50

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Plant McDonough Background

Pace Project No.: 2622590

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2622590001	DGWA-53	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McDonough Background

Pace Project No.: 2622590

Sample: DGWA-53 **Lab ID: 2622590001** Collected: 08/28/19 15:55 Received: 08/29/19 12:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	1.38 ± 0.451 (0.394) C:81% T:NA	pCi/L	09/12/19 08:42	13982-63-3	
Radium-228	EPA 9320	1.30 ± 0.446 (0.590) C:69% T:95%	pCi/L	09/19/19 15:19	15262-20-1	
Total Radium	Total Radium Calculation	2.68 ± 0.897 (0.984)	pCi/L	09/23/19 11:58	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant McDonough Background

Pace Project No.: 2622590

QC Batch: 359954

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2622590001

METHOD BLANK: 1747365

Matrix: Water

Associated Lab Samples: 2622590001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.0188 ± 0.324 (0.758) C:68% T:80%	pCi/L	09/19/19 15:18	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant McDonough Background

Pace Project No.: 2622590

QC Batch: 359953

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Associated Lab Samples: 2622590001

METHOD BLANK: 1747363

Matrix: Water

Associated Lab Samples: 2622590001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.412 ± 0.223 (0.263) C:94% T:NA	pCi/L	09/12/19 08:42	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Plant McDonough Background
Pace Project No.: 2622590

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

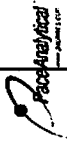
Project: Plant McDonough Background

Pace Project No.: 2622590

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622590001	DGWA-53	EPA 9315	359953		
2622590001	DGWA-53	EPA 9320	359954		
2622590001	DGWA-53	Total Radium Calculation	362615		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document
 The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A
 Required Client Information: Company: Georgia Power - Coal Combustion Residuals
 Address: 2450 Manor Road, Atlanta, GA 30339
 Email: jbraham@southenco.com
 Phone: (404) 506-7239
 Requested Due Date: Standard TAT

Section B
 Required Project Information: Report To: Jofu Abraham
 Copy To: Golder
 Purchase Order #: SCS10382775
 Project Name: Plant McDonough Background
 Project #: 166849618

Section C
 Invoice Information: Attention: scsinvoices@southenco.com
 Company Name: Pace Quota:
 Address: Pace Project Manager: betsy.mcdaniel@pacelabs.com
 State/Location: GA
 Regulatory Agency:

ITEM #	MATRIX	MATRIX CODE (see vial codes to kit)	SAMPLE TYPE (G-GRAB C-COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives	Analyses Test	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)
1	DGWA-S	WT	G	8/28/2019	1555		4	<input checked="" type="checkbox"/> H2SO4 <input checked="" type="checkbox"/> HNO3 <input checked="" type="checkbox"/> HCl <input type="checkbox"/> NaOH <input type="checkbox"/> Na2S2O3 <input type="checkbox"/> Methanol <input type="checkbox"/> Other	<input checked="" type="checkbox"/> Metals App IV <input checked="" type="checkbox"/> Fluoride by 300.0 <input checked="" type="checkbox"/> Radium 226/228		
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											

WO#: 2622590

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	TEMP in C	Received on	ice (Y/N)	Custody	Cooler	Sealed	Samples Intact (Y/N)
<i>Jofu Abraham</i> Golder	8-28-19	10:50	<i>B. B. H.</i> Golder	8/28/19	12:30	20						



Sample Condition Upon Receipt

Client Name: GIA Power Project # _____

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____
Tracking #: _____

WO#: **2622590**

PM: **BM** Due Date: **09/27/19**

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

CLIENT: **GAPower-CCR**

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used 83

Type of Ice: Wet Blue None

Samples on ice, cooling process has begun

Cooler Temperature 2.0

Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: 8/29/19 m

Temp should be above freezing to 6°C

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
		Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____

Date: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

November 14, 2019

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

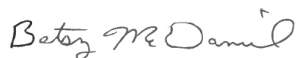
RE: Project: Plant McDonough AP-1
Pace Project No.: 2624497

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on October 17, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Betsy McDaniel
betsy.mcdaniel@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: Daniela Herrera, Golder
Ben Hodges, Georgia Power
Jimmy Jones, Golder Associates Inc.
Kristen Jurinko
Julie Lehrman, Golder Associates Inc.
Dawn Prell, Golder Associates Inc.
Tim Richards, Golder Associates - Atlanta
Rebecca Thornton, Pace Analytical Atlanta



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Plant McDonough AP-1
Pace Project No.: 2624497

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991

Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Plant McDonough AP-1

Pace Project No.: 2624497

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624497001	DGWC-68A	Water	10/16/19 16:10	10/17/19 12:00
2624497002	DGWC-69	Water	10/16/19 15:25	10/17/19 12:00
2624497003	FD-3	Water	10/16/19 00:00	10/17/19 12:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Plant McDonough AP-1

Pace Project No.: 2624497

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2624497001	DGWC-68A	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624497002	DGWC-69	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624497003	FD-3	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McDonough AP-1

Pace Project No.: 2624497

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.323 ± 0.276 (0.485) C:78% T:NA	pCi/L	11/06/19 08:02	13982-63-3	
Radium-228	EPA 9320	1.80 ± 0.668 (1.03) C:75% T:86%	pCi/L	11/06/19 17:26	15262-20-1	
Total Radium	Total Radium Calculation	2.12 ± 0.944 (1.52)	pCi/L	11/12/19 10:41	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McDonough AP-1

Pace Project No.: 2624497

Sample: DGWC-69 **Lab ID: 2624497002** Collected: 10/16/19 15:25 Received: 10/17/19 12:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.542 ± 0.303 (0.404) C:88% T:NA	pCi/L	11/06/19 08:02	13982-63-3	
Radium-228	EPA 9320	0.284 ± 0.418 (0.901) C:75% T:83%	pCi/L	11/06/19 17:26	15262-20-1	
Total Radium	Total Radium Calculation	0.826 ± 0.721 (1.31)	pCi/L	11/12/19 10:41	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McDonough AP-1

Pace Project No.: 2624497

Sample: FD-3 **Lab ID: 2624497003** Collected: 10/16/19 00:00 Received: 10/17/19 12:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	1.13 ± 0.430 (0.451) C:93% T:NA	pCi/L	11/06/19 08:02	13982-63-3	
Radium-228	EPA 9320	0.972 ± 0.595 (1.13) C:72% T:86%	pCi/L	11/06/19 17:26	15262-20-1	
Total Radium	Total Radium Calculation	2.10 ± 1.03 (1.58)	pCi/L	11/12/19 10:41	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant McDonough AP-1

Pace Project No.: 2624497

QC Batch:	368259	Analysis Method:	EPA 9315
QC Batch Method:	EPA 9315	Analysis Description:	9315 Total Radium
Associated Lab Samples:	2624497001, 2624497002, 2624497003		

METHOD BLANK:	1786863	Matrix:	Water
Associated Lab Samples:	2624497001, 2624497002, 2624497003		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.306 ± 0.244 (0.419) C:96% T:NA	pCi/L	11/06/19 08:02	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant McDonough AP-1

Pace Project No.: 2624497

QC Batch: 368258

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2624497001, 2624497002, 2624497003

METHOD BLANK: 1786861

Matrix: Water

Associated Lab Samples: 2624497001, 2624497002, 2624497003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.0170 ± 0.384 (0.894) C:77% T:79%	pCi/L	11/06/19 17:17	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: Plant McDonough AP-1

Pace Project No.: 2624497

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant McDonough AP-1
Pace Project No.: 2624497

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624497001	DGWC-68A	EPA 9315	368259		
2624497002	DGWC-69	EPA 9315	368259		
2624497003	FD-3	EPA 9315	368259		
2624497001	DGWC-68A	EPA 9320	368258		
2624497002	DGWC-69	EPA 9320	368258		
2624497003	FD-3	EPA 9320	368258		
2624497001	DGWC-68A	Total Radium Calculation	370509		
2624497002	DGWC-69	Total Radium Calculation	370509		
2624497003	FD-3	Total Radium Calculation	370509		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A		Section B		Section C	
Required Client Information:		Required Project Information:		Invoice Information:	
Company: Georgia Power - Coal Combustion Residuals	Report To: Jolu Abraham	Attention: cesinvoicess@southernco.com	Company Name:	Company Name:	
Address: 2480 Maner Road	Copy To: Golder	Address:	Address:	Address:	
Atlanta, GA 30339		Purchase Order #: SCS10382775	Peace Quote:	Peace Quote:	
Email: jabraham@southernco.com		Project Name: Plant McDonough AP-1	Peace Project Manager: betsy.mcdaniel@pacelabs.com,	Peace Project Manager:	
Phone: (404)506-7239	Fax:	Project #: 168849818	Peace Profile #: 332.7.2	Peace Profile #:	
Requested Due Date: Standard TAT					

ITEM #	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G-GRAB C-COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved - Ice	PRESERVATIVES				Metals App. III & App. IV	TDS, Cl, F, SO4	Radium 226/228	Residual Chlorine (Y/N)	Received on	Ice (Y/N)	Custody Sealed (Y/N)	Samples Intact (Y/N)
								H2SO4	HNO3	HCl	NaOH								
1	DGWC-88A	G	10/16/2019	1610		4	X					X	X						
2	DGWC-89	G	10/16/2019	1525		4	X					X	X						
3	FD-3	G	10/16/2019	-		4	X					X	X						
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			

WOH: 2624497

DATE Signed: _____



Client Name: GA Power

WUH-2024451
PM: BM Due Date: 11/14/19
CLIENT: GRPower-GCR

Courier: Fed Ex UPS USPS Client Commercial Pace Other

Tracking #: _____

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used 214

Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temperature 1.0°C

Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: 10/12/19 CD

Temp should be above freezing to 6°C

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11. <u>Field Filtered Nets + DOC</u>
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
exceptions: VOA, coliform, <u>TOC</u> , O&G, WI-DRO (water)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed
		Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review:

Date: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

November 14, 2019

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

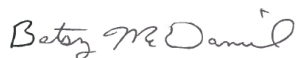
RE: Project: Plant McDonough Background
Pace Project No.: 2624495

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on October 17, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Betsy McDaniel
betsy.mcdaniel@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: Daniela Herrera, Golder
Ben Hodges, Georgia Power
Jimmy Jones, Golder Associates Inc.
Kristen Jurinko
Julie Lehrman, Golder Associates Inc.
Dawn Prell, Golder Associates Inc.
Tim Richards, Golder Associates - Atlanta
Rebecca Thornton, Pace Analytical Atlanta



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Plant McDonough Background
Pace Project No.: 2624495

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991

Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Plant McDonough Background

Pace Project No.: 2624495

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624495001	DGWA-53	Water	10/16/19 10:00	10/17/19 12:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Plant McDonough Background

Pace Project No.: 2624495

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2624495001	DGWA-53	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McDonough Background

Pace Project No.: 2624495

Sample: DGWA-53 **Lab ID: 2624495001** Collected: 10/16/19 10:00 Received: 10/17/19 12:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	1.26 ± 0.449 (0.426) C:93% T:NA	pCi/L	11/06/19 08:02	13982-63-3	
Radium-228	EPA 9320	0.626 ± 0.409 (0.774) C:75% T:93%	pCi/L	11/06/19 17:17	15262-20-1	
Total Radium	Total Radium Calculation	1.89 ± 0.858 (1.20)	pCi/L	11/12/19 10:41	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant McDonough Background

Pace Project No.: 2624495

QC Batch: 368259

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Associated Lab Samples: 2624495001

METHOD BLANK: 1786863

Matrix: Water

Associated Lab Samples: 2624495001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.306 ± 0.244 (0.419) C:96% T:NA	pCi/L	11/06/19 08:02	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant McDonough Background

Pace Project No.: 2624495

QC Batch: 368258

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2624495001

METHOD BLANK: 1786861

Matrix: Water

Associated Lab Samples: 2624495001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.0170 ± 0.384 (0.894) C:77% T:79%	pCi/L	11/06/19 17:17	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Plant McDonough Background

Pace Project No.: 2624495

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant McDonough Background
Pace Project No.: 2624495

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624495001	DGWA-53	EPA 9315	368259		
2624495001	DGWA-53	EPA 9320	368258		
2624495001	DGWA-53	Total Radium Calculation	370509		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A
 Required Client Information:
 Company: Georgia Power - Coal Combustion Residuals
 Address: 2480 Maner Road
 Atlanta, GA 30339
 Email: jbrubart@southermo.com
 Phone: (404)566-7239
 Fax: Standard TAT

Section B
 Required Project Information:
 Report To: Jolu Abraham
 Copy To: Golder
 Purchase Order #: SCS10382775
 Project Name: Plant McDonough Background
 Project #: 16684961

Section C
 Invoice Information:
 Attention: csinvoices@southermo.com
 Company Name:
 Address:
 Pace Quote:
 Pace Project Manager: betsy.mcdonahoe@pacelabs.com
 Pace Profile #: 332.7.2
 GA

Page: 1 Of 1

ITEM #	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved - Ice	H2SO4	HNO3	HCl	NaOH + Zn Acetate	Na2S2O3	Methanol	Other	Analytes Test	Y/N	Metals App III and App IV Total	TDS, Cl, F, SO4	Radium 226/228	Residual Chlorine (Y/N)	Requested Analysis Element (Y/N)	DATE	TIME	Received on Ice	Custody Sealed	Cooler	Samples Intact	
																												DATE
1	DGWA-53	G	10/16/2019	1000		4	X										X											
2																												
3																												
4																												
5																												
6																												
7																												

NO# : 2624495

2624495

DATE	TIME	APPROVED BY	DATE	TIME	RECEIVED BY	DATE	TIME
10/17/19	11:00	[Signature]	10/17/19	11:00	[Signature]	10/17/19	11:00
10/17/19	12:00	[Signature]	10/17/19	12:00	[Signature]	10/17/19	12:00

WO#: 2624495



Client Name: GA Power

PM: BM Due Date: 11/14/19 CLIENT: GAPower-CCR

Courier: Fed Ex UPS USPS Client Commercial Pace Other

Tracking #: _____

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used 214 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temperature 1.0°C Biological Tissue is Frozen: Yes No

Date and initials of person examining contents: 10/12/19 CCR

		Comments:
Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11. Field Filtered Nets + DOC
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix:		
All containers needing preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
exceptions: VOA, coliform, <u>TOC</u> , O&G, WI-DRO (water)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed
		Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: _____ Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

December 30, 2019

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

RE: Project: Plant McDonough Background
Pace Project No.: 2624494

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on October 17, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kevin Herring for
Betsy McDaniel
betsy.mcdaniel@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: Daniela Herrera, Golder
Ben Hodges, Georgia Power
Jimmy Jones, Golder Associates Inc.
Kristen Jurinko
Julie Lehrman, Golder Associates Inc.
Dawn Prell, Golder Associates Inc.
Tim Richards, Golder Associates - Atlanta
Rebecca Thornton, Pace Analytical Atlanta



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: Plant McDonough Background

Pace Project No.: 2624494

Pace Analytical Services Atlanta

110 Technology Parkway Peachtree Corners, GA 30092

Florida DOH Certification #: E87315

Georgia DW Inorganics Certification #: 812

Georgia DW Microbiology Certification #: 812

North Carolina Certification #: 381

South Carolina Certification #: 98011001

Virginia Certification #: 460204

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
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SAMPLE SUMMARY

Project: Plant McDonough Background

Pace Project No.: 2624494

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624494001	DGWA-53	Water	10/16/19 10:00	10/17/19 12:00

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: Plant McDonough Background

Pace Project No.: 2624494

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2624494001	DGWA-53	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	MZP	1
		EPA 300.0	MWB	3

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
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ANALYTICAL RESULTS

Project: Plant McDonough Background
Pace Project No.: 2624494

Sample: DGWA-53		Lab ID: 2624494001		Collected: 10/16/19 10:00		Received: 10/17/19 12:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	10/21/19 16:03	10/23/19 23:06	7440-36-0		
Arsenic	0.0018J	mg/L	0.0050	0.00035	1	10/21/19 16:03	10/23/19 23:06	7440-38-2		
Barium	0.077	mg/L	0.010	0.00049	1	10/21/19 16:03	10/23/19 23:06	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	10/21/19 16:03	10/25/19 11:41	7440-41-7		
Boron	0.059	mg/L	0.040	0.0049	1	10/21/19 16:03	10/23/19 23:06	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	10/21/19 16:03	10/23/19 23:06	7440-43-9		
Calcium	17.7	mg/L	5.0	0.55	50	10/21/19 16:03	10/23/19 23:12	7440-70-2		
Chromium	ND	mg/L	0.010	0.00039	1	10/21/19 16:03	10/23/19 23:06	7440-47-3		
Cobalt	0.0090	mg/L	0.0050	0.00030	1	10/21/19 16:03	10/23/19 23:06	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	10/21/19 16:03	10/23/19 23:06	7439-92-1		
Lithium	0.0094J	mg/L	0.030	0.00078	1	10/21/19 16:03	10/25/19 11:41	7439-93-2		
Molybdenum	0.037	mg/L	0.010	0.00095	1	10/21/19 16:03	10/23/19 23:06	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	10/21/19 16:03	10/23/19 23:06	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	10/21/19 16:03	10/23/19 23:06	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	10/23/19 10:07	10/23/19 15:34	7439-97-6		
2540C Total Dissolved Solids		Analytical Method: SM 2540C								
Total Dissolved Solids	126	mg/L	10.0	10.0	1		10/23/19 15:49			
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Chloride	2.0	mg/L	1.0	0.024	1		10/25/19 06:39	16887-00-6		
Fluoride	0.11J	mg/L	0.30	0.029	1		10/25/19 06:39	16984-48-8		
Sulfate	15.1	mg/L	1.0	0.017	1		10/25/19 06:39	14808-79-8		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant McDonough Background

Pace Project No.: 2624494

QC Batch: 37300	Analysis Method: EPA 7470A
QC Batch Method: EPA 7470A	Analysis Description: 7470 Mercury
Associated Lab Samples: 2624494001	

METHOD BLANK: 168761 Matrix: Water
Associated Lab Samples: 2624494001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	10/23/19 14:38	

LABORATORY CONTROL SAMPLE: 168762

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0024	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 168763 168764

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		2624388001 Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Mercury	mg/L	ND	0.0025	0.0025	0.0024	0.0024	97	96	75-125	2	20		

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QUALITY CONTROL DATA

Project: Plant McDonough Background
Pace Project No.: 2624494

QC Batch: 37286 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2624494001

METHOD BLANK: 168679 Matrix: Water
Associated Lab Samples: 2624494001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	10/23/19 18:31	
Arsenic	mg/L	ND	0.0050	0.00035	10/23/19 18:31	
Barium	mg/L	ND	0.010	0.00049	10/23/19 18:31	
Beryllium	mg/L	ND	0.0030	0.000074	10/23/19 18:31	
Boron	mg/L	ND	0.040	0.0049	10/23/19 18:31	
Cadmium	mg/L	ND	0.0025	0.00011	10/23/19 18:31	
Calcium	mg/L	ND	0.10	0.011	10/23/19 18:31	
Chromium	mg/L	ND	0.010	0.00039	10/23/19 18:31	
Cobalt	mg/L	ND	0.0050	0.00030	10/23/19 18:31	
Lead	mg/L	ND	0.0050	0.000046	10/23/19 18:31	
Lithium	mg/L	ND	0.030	0.00078	10/23/19 18:31	
Molybdenum	mg/L	ND	0.010	0.00095	10/23/19 18:31	
Selenium	mg/L	ND	0.010	0.0013	10/23/19 18:31	
Thallium	mg/L	ND	0.0010	0.000052	10/23/19 18:31	

LABORATORY CONTROL SAMPLE: 168680

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.10	102	80-120	
Arsenic	mg/L	0.1	0.098	98	80-120	
Barium	mg/L	0.1	0.10	101	80-120	
Beryllium	mg/L	0.1	0.10	103	80-120	
Boron	mg/L	1	0.99	99	80-120	
Cadmium	mg/L	0.1	0.10	100	80-120	
Calcium	mg/L	1	1.0	101	80-120	
Chromium	mg/L	0.1	0.099	99	80-120	
Cobalt	mg/L	0.1	0.098	98	80-120	
Lead	mg/L	0.1	0.10	101	80-120	
Lithium	mg/L	0.1	0.10	103	80-120	
Molybdenum	mg/L	0.1	0.10	101	80-120	
Selenium	mg/L	0.1	0.095	95	80-120	
Thallium	mg/L	0.1	0.10	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 168681 168682

Parameter	Units	2624484003 Result	MS		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MSD Spike Conc.								
Antimony	mg/L	ND	0.1	0.1	0.10	0.10	100	100	75-125	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant McDonough Background

Pace Project No.: 2624494

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 168681		168682		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		2624484003 Result	MS Spike Conc.	MSD Spike Conc.									
Arsenic	mg/L	0.00040J	0.1	0.1	0.10	0.10	100	100	75-125	0	20		
Barium	mg/L	0.037	0.1	0.1	0.15	0.14	109	107	75-125	1	20		
Beryllium	mg/L	0.00015J	0.1	0.1	0.095	0.094	95	94	75-125	0	20		
Boron	mg/L	2.2	1	1	3.1	3.1	90	90	75-125	0	20		
Cadmium	mg/L	ND	0.1	0.1	0.10	0.10	100	100	75-125	1	20		
Calcium	mg/L	61.2	1	1	62.7	66.1	145	485	75-125	5	20	M6	
Chromium	mg/L	0.0064J	0.1	0.1	0.11	0.10	100	98	75-125	2	20		
Cobalt	mg/L	ND	0.1	0.1	0.097	0.097	97	97	75-125	0	20		
Lead	mg/L	ND	0.1	0.1	0.097	0.097	97	97	75-125	0	20		
Lithium	mg/L	0.0022J	0.1	0.1	0.096	0.095	94	93	75-125	1	20		
Molybdenum	mg/L	ND	0.1	0.1	0.10	0.10	104	101	75-125	3	20		
Selenium	mg/L	ND	0.1	0.1	0.096	0.096	96	95	75-125	0	20		
Thallium	mg/L	ND	0.1	0.1	0.098	0.098	98	98	75-125	0	20		

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QUALITY CONTROL DATA

Project: Plant McDonough Background

Pace Project No.: 2624494

QC Batch: 37419	Analysis Method: SM 2540C
QC Batch Method: SM 2540C	Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 2624494001	

LABORATORY CONTROL SAMPLE: 169291

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	391	98	84-108	

SAMPLE DUPLICATE: 169292

Parameter	Units	2624484007 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	ND	ND		10	

SAMPLE DUPLICATE: 169293

Parameter	Units	2624491004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	500	501	0	10	

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QUALITY CONTROL DATA

Project: Plant McDonough Background
Pace Project No.: 2624494

QC Batch: 37483 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2624494001

METHOD BLANK: 169745 Matrix: Water
Associated Lab Samples: 2624494001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.024	10/25/19 02:57	
Fluoride	mg/L	ND	0.30	0.029	10/25/19 02:57	
Sulfate	mg/L	0.054J	1.0	0.017	10/25/19 02:57	

LABORATORY CONTROL SAMPLE: 169746

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	93	90-110	
Fluoride	mg/L	5	4.8	97	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 169747 169748

Parameter	Units	2624451001		169748		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Chloride	mg/L	27.7	5	5	33.9	33.8	124	123	0	15	M1
Fluoride	mg/L	0.38	5	5	11.1	11.4	214	221	3	15	M1
Sulfate	mg/L	ND	5	5	ND	ND	0	0		15	M1

MATRIX SPIKE SAMPLE: 169749

Parameter	Units	2624451002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	4.3	5	13.6	185	90-110	M1
Fluoride	mg/L	0.57	5	10.8	204	90-110	M1
Sulfate	mg/L	ND	5	ND	0	90-110	M1

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Plant McDonough Background

Pace Project No.: 2624494

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant McDonough Background

Pace Project No.: 2624494

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624494001	DGWA-53	EPA 3005A	37286	EPA 6020B	37308
2624494001	DGWA-53	EPA 7470A	37300	EPA 7470A	37416
2624494001	DGWA-53	SM 2540C	37419		
2624494001	DGWA-53	EPA 300.0	37483		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A		Section B		Section C	
Required Client Information:		Required Project Information:		Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Johu Abraham	Attention:	scsinvoices@southernco.com
Address:	2480 Manor Road Atlanta, GA 30039	Copy To:	Golden	Company Name:	
Email:	jabraham@southernco.com	Purchase Order #:	SCS10382775	Address:	
Phone:	(404)506-7239	Project Name:	Plant McDonough Background	Pace Quote:	
Fax:		Pace Project Manager:	betsy.mcdanield@paceelabs.com,	Pace Profile #:	332.7.2
Requested Due Date:	Standard TAT	Project #:	16684961	State / Location:	GA

ITEM #	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G-GRAB C-COMP)	DATE	TIME	SAMPLER TEMP AT COLLECTION	# OF CONTAINERS	ACCEPTED BY / AFFILIATION		DATE	TIME	SAMPLE CONDITIONS					
							Signature	Signature			Received on	Custody Sealed	Control	Samples Interact		
1	DGWA-53	G	10/16/2019	1000		4	X		10/17/19	1100						
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	TEMP in C	Received on	Custody Sealed	Control	Samples Interact
	<i>[Signature]</i>	10/17/19	1200	<i>[Signature]</i>	10/17/19	1100					
	<i>[Signature]</i>	10/17/19	1200	<i>[Signature]</i>	10/17/19	1200	110	X	Y	Y	Y

NO# : 2624494

2624494

DATE Signed:

Sample Condition Upon Receipt

WO#: 2624494

PH: **BN** Due Date: **10/24/19**
 CLIENT: **GAPower-CCR**



Client Name: GAPower

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used 214 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temperature 1.0°C
 Temp should be above freezing to 6°C

Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: 10/17/19 CD

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.	
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.	
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.	
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.	
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.	
Short Hold Time Analysis (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.	
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.	
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.	
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.	
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.	
Filtered volume received for Dissolved tests	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.	<u>Field Filtered Nets + DOC</u>
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.	
-Includes date/time/ID/Analysis Matrix:	<u>W</u>		
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
exceptions: VOA, coliform, <u>TOC</u> , O&G, WI-DRO (water)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed	Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.	
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.	
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.	
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A		
Pace Trip Blank Lot # (if purchased):	_____		

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____

Date: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

November 14, 2019

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

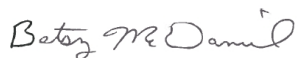
RE: Project: Plant McDonough AP-2,3/4
Pace Project No.: 2624398

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on October 16, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Betsy McDaniel
betsy.mcdaniel@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: Daniela Herrera, Golder
Ben Hodges, Georgia Power
Jimmy Jones, Golder Associates Inc.
Kristen Jurinko
Julie Lehrman, Golder Associates Inc.
Dawn Prell, Golder Associates Inc.
Tim Richards, Golder Associates - Atlanta
Rebecca Thornton, Pace Analytical Atlanta



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Plant McDonough AP-2,3/4
Pace Project No.: 2624398

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991

Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Plant McDonough AP-2,3/4
Pace Project No.: 2624398

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624398001	DGWA-70A	Water	10/15/19 12:15	10/16/19 14:00
2624398002	DGWA-71	Water	10/15/19 15:08	10/16/19 14:00
2624398003	FB-1	Water	10/15/19 11:45	10/16/19 14:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Plant McDonough AP-2,3/4

Pace Project No.: 2624398

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2624398001	DGWA-70A	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624398002	DGWA-71	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624398003	FB-1	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McDonough AP-2,3/4

Pace Project No.: 2624398

Sample: DGWA-70A **Lab ID: 2624398001** Collected: 10/15/19 12:15 Received: 10/16/19 14:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.200 ± 0.209 (0.401) C:93% T:NA	pCi/L	11/07/19 08:49	13982-63-3	
Radium-228	EPA 9320	0.119 ± 0.865 (1.98) C:63% T:78%	pCi/L	11/07/19 20:14	15262-20-1	
Total Radium	Total Radium Calculation	0.319 ± 1.07 (2.38)	pCi/L	11/12/19 10:42	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McDonough AP-2,3/4

Pace Project No.: 2624398

Sample: DGWA-71 **Lab ID: 2624398002** Collected: 10/15/19 15:08 Received: 10/16/19 14:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.628 ± 0.348 (0.528) C:87% T:NA	pCi/L	11/07/19 08:54	13982-63-3	
Radium-228	EPA 9320	0.586 ± 0.813 (1.74) C:65% T:77%	pCi/L	11/07/19 20:14	15262-20-1	
Total Radium	Total Radium Calculation	1.21 ± 1.16 (2.27)	pCi/L	11/12/19 10:42	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McDonough AP-2,3/4

Pace Project No.: 2624398

Sample: FB-1 **Lab ID: 2624398003** Collected: 10/15/19 11:45 Received: 10/16/19 14:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.288 ± 0.235 (0.405) C:92% T:NA	pCi/L	11/07/19 08:56	13982-63-3	
Radium-228	EPA 9320	0.864 ± 0.820 (1.68) C:70% T:77%	pCi/L	11/07/19 20:14	15262-20-1	
Total Radium	Total Radium Calculation	1.15 ± 1.06 (2.09)	pCi/L	11/12/19 10:42	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant McDonough AP-2,3/4

Pace Project No.: 2624398

QC Batch:	368367	Analysis Method:	EPA 9315
QC Batch Method:	EPA 9315	Analysis Description:	9315 Total Radium
Associated Lab Samples:	2624398001, 2624398002, 2624398003		

METHOD BLANK:	1787254	Matrix:	Water
Associated Lab Samples:	2624398001, 2624398002, 2624398003		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.416 ± 0.262 (0.396) C:98% T:NA	pCi/L	11/07/19 07:47	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant McDonough AP-2,3/4

Pace Project No.: 2624398

QC Batch: 368368

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2624398001, 2624398002, 2624398003

METHOD BLANK: 1787255

Matrix: Water

Associated Lab Samples: 2624398001, 2624398002, 2624398003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.536 ± 0.405 (0.790) C:74% T:76%	pCi/L	11/07/19 14:59	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALIFIERS

Project: Plant McDonough AP-2,3/4

Pace Project No.: 2624398

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant McDonough AP-2,3/4

Pace Project No.: 2624398

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624398001	DGWA-70A	EPA 9315	368367		
2624398002	DGWA-71	EPA 9315	368367		
2624398003	FB-1	EPA 9315	368367		
2624398001	DGWA-70A	EPA 9320	368368		
2624398002	DGWA-71	EPA 9320	368368		
2624398003	FB-1	EPA 9320	368368		
2624398001	DGWA-70A	Total Radium Calculation	370512		
2624398002	DGWA-71	Total Radium Calculation	370512		
2624398003	FB-1	Total Radium Calculation	370512		

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A		Section B		Section C	
Required Client Information:		Required Project Information:		Invoice Information:	
Company: Georgia Power - Coal Combustion Residuals		Report To: Joju Abraham		Attention: scsinvoices@southernco.com	
Address: 2480 Maner Road		Copy To: Golder		Company Name:	
Atlanta, GA 30339		Purchase Order #: SCS10382775		Address:	
Email: jbraham@southernco.com		Project Name: Plant McDonough Background		Pace Quote:	
Phone: (404)506-7239		Project #: 16684961		Pace Project Manager: belsy.mcdaniel@pacelabs.com.	
Requested Due Date: Standard TAT		Project #: 16684961		Pace Profile #: 332.7.2	

ITEM #	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	PRESERVATIVES				ANALYSES TEST	Residual Chlorine (Y/N)		
							H2SO4	HNO3	HCl	NaOH + Zn Acetate			Na2S2O3	Methanol
1	DGWA-70A	G	10/15/2019	1215		4	X	X						
2	DGWA-71	G	10/15/2019	1508		4	X	X						
3	FB-1	G	10/15/2019	1145		4	X	X						
4														
5														
6														
7														
8														
9														
10														
11														
12														

WO#: 2624398

REQUIREMENTS OF APPLICATOR	DATE	TIME	APPROVED BY / SIGNATURE	DATE	TIME	SAMPLE CONDITIONS
AW	10-16-19	12:15	JOY RICHARDS	10/16/19	12:15	
Golder			Charles Hawke	10/16/19	1:37	Y



Sample Condition Upon Receipt

WO#: 2624398

Client Name: GAPower

PM: BM Due Date: 11/13/19 CLIENT: GAPower-CCR

Courier: Fed Ex UPS USPS Client Commercial Pace Other

Tracking #: Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Proj: Due Date: Proj: Name:

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used 514 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temperature 6.3 C Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: 10/16/19

Temp should be above freezing to 6 C Comments:

Table with 16 rows of checklist items and checkboxes. Items include Chain of Custody Present, Chain of Custody Filled Out, Chain of Custody Relinquished, Sampler Name & Signature on COC, Samples Arrived within Hold Time, Short Hold Time Analysis (<72hr), Rush Turn Around Time Requested, Sufficient Volume, Correct Containers Used, Containers Intact, Filtered volume received for Dissolved tests, Sample Labels match COC, All containers needing preservation have been checked, All containers needing preservation are found to be in compliance with EPA recommendation, exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Samples checked for dechlorination, Headspace in VOA Vials (>6mm), Trip Blank Present, Trip Blank Custody Seals Present, Pace Trip Blank Lot # (if purchased).

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: Date:

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

December 30, 2019

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

RE: Project: Plant McDonough AP-2,3/4
Pace Project No.: 2624397

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on October 16, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kevin Herring for
Betsy McDaniel
betsy.mcdaniel@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: Daniela Herrera, Golder
Ben Hodges, Georgia Power
Jimmy Jones, Golder Associates Inc.
Kristen Jurinko
Julie Lehrman, Golder Associates Inc.
Dawn Prell, Golder Associates Inc.
Tim Richards, Golder Associates - Atlanta
Rebecca Thornton, Pace Analytical Atlanta



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Plant McDonough AP-2,3/4

Pace Project No.: 2624397

Pace Analytical Services Atlanta

110 Technology Parkway Peachtree Corners, GA 30092

Florida DOH Certification #: E87315

Georgia DW Inorganics Certification #: 812

Georgia DW Microbiology Certification #: 812

North Carolina Certification #: 381

South Carolina Certification #: 98011001

Virginia Certification #: 460204

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SAMPLE SUMMARY

Project: Plant McDonough AP-2,3/4

Pace Project No.: 2624397

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624397001	DGWA-70A	Water	10/15/19 12:15	10/16/19 14:00
2624397002	DGWA-71	Water	10/15/19 15:08	10/16/19 14:00
2624397003	FB-1	Water	10/15/19 11:45	10/16/19 14:00

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SAMPLE ANALYTE COUNT

Project: Plant McDonough AP-2,3/4

Pace Project No.: 2624397

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2624397001	DGWA-70A	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2624397002	DGWA-71	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2624397003	FB-1	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	ALW	1
		EPA 300.0	MWB	3

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant McDonough AP-2,3/4
Pace Project No.: 2624397

Sample: DGWA-70A Lab ID: 2624397001 Collected: 10/15/19 12:15 Received: 10/16/19 14:00 Matrix: Water									
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
6020B MET ICPMS Analytical Method: EPA 6020B Preparation Method: EPA 3005A									
Antimony	ND	mg/L	0.0030	0.00027	1	10/20/19 16:44	10/22/19 22:12	7440-36-0	
Arsenic	0.00052J	mg/L	0.0050	0.00035	1	10/20/19 16:44	10/22/19 22:12	7440-38-2	B
Barium	0.034	mg/L	0.010	0.00049	1	10/20/19 16:44	10/22/19 22:12	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	10/20/19 16:44	10/22/19 22:12	7440-41-7	
Boron	ND	mg/L	0.040	0.0049	1	10/20/19 16:44	10/22/19 22:12	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	10/20/19 16:44	10/22/19 22:12	7440-43-9	
Calcium	5.1	mg/L	0.10	0.011	1	10/20/19 16:44	10/22/19 22:12	7440-70-2	
Chromium	0.034	mg/L	0.010	0.00039	1	10/20/19 16:44	10/22/19 22:12	7440-47-3	
Cobalt	0.00064J	mg/L	0.0050	0.00030	1	10/20/19 16:44	10/22/19 22:12	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	10/20/19 16:44	10/22/19 22:12	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	10/20/19 16:44	10/22/19 22:12	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	10/20/19 16:44	10/22/19 22:12	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	10/20/19 16:44	10/22/19 22:12	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	10/20/19 16:44	10/22/19 22:12	7440-28-0	
7470 Mercury Analytical Method: EPA 7470A Preparation Method: EPA 7470A									
Mercury	ND	mg/L	0.00050	0.00014	1	10/23/19 10:07	10/23/19 15:06	7439-97-6	
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	70.0	mg/L	10.0	10.0	1		10/18/19 10:46		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Chloride	2.2	mg/L	1.0	0.024	1		10/22/19 00:17	16887-00-6	
Fluoride	ND	mg/L	0.30	0.029	1		10/22/19 00:17	16984-48-8	
Sulfate	0.16J	mg/L	1.0	0.017	1		10/22/19 00:17	14808-79-8	

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ANALYTICAL RESULTS

Project: Plant McDonough AP-2,3/4
Pace Project No.: 2624397

Sample: DGWA-71 Lab ID: 2624397002 Collected: 10/15/19 15:08 Received: 10/16/19 14:00 Matrix: Water									
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
6020B MET ICPMS Analytical Method: EPA 6020B Preparation Method: EPA 3005A									
Antimony	ND	mg/L	0.0030	0.00027	1	10/20/19 16:44	10/22/19 22:24	7440-36-0	
Arsenic	0.00071J	mg/L	0.0050	0.00035	1	10/20/19 16:44	10/22/19 22:24	7440-38-2	B
Barium	0.024	mg/L	0.010	0.00049	1	10/20/19 16:44	10/22/19 22:24	7440-39-3	
Beryllium	0.000088J	mg/L	0.0030	0.000074	1	10/20/19 16:44	10/22/19 22:24	7440-41-7	
Boron	0.0054J	mg/L	0.040	0.0049	1	10/20/19 16:44	10/22/19 22:24	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	10/20/19 16:44	10/22/19 22:24	7440-43-9	
Calcium	5.1	mg/L	0.10	0.011	1	10/20/19 16:44	10/22/19 22:24	7440-70-2	
Chromium	0.0025J	mg/L	0.010	0.00039	1	10/20/19 16:44	10/22/19 22:24	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	10/20/19 16:44	10/22/19 22:24	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	10/20/19 16:44	10/22/19 22:24	7439-92-1	
Lithium	0.0012J	mg/L	0.030	0.00078	1	10/20/19 16:44	10/22/19 22:24	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	10/20/19 16:44	10/22/19 22:24	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	10/20/19 16:44	10/22/19 22:24	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	10/20/19 16:44	10/22/19 22:24	7440-28-0	
7470 Mercury Analytical Method: EPA 7470A Preparation Method: EPA 7470A									
Mercury	ND	mg/L	0.00050	0.00014	1	10/23/19 10:07	10/23/19 15:08	7439-97-6	
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	89.0	mg/L	10.0	10.0	1		10/18/19 10:46		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Chloride	3.3	mg/L	1.0	0.024	1		10/22/19 00:39	16887-00-6	
Fluoride	ND	mg/L	0.30	0.029	1		10/22/19 00:39	16984-48-8	
Sulfate	7.4	mg/L	1.0	0.017	1		10/22/19 00:39	14808-79-8	

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ANALYTICAL RESULTS

Project: Plant McDonough AP-2,3/4
Pace Project No.: 2624397

Sample: FB-1		Lab ID: 2624397003		Collected: 10/15/19 11:45		Received: 10/16/19 14:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	10/20/19 16:44	10/22/19 22:47	7440-36-0	
Arsenic	0.00059J	mg/L	0.0050	0.00035	1	10/20/19 16:44	10/22/19 22:47	7440-38-2	B
Barium	ND	mg/L	0.010	0.00049	1	10/20/19 16:44	10/22/19 22:47	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	10/20/19 16:44	10/22/19 22:47	7440-41-7	
Boron	ND	mg/L	0.040	0.0049	1	10/20/19 16:44	10/22/19 22:47	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	10/20/19 16:44	10/22/19 22:47	7440-43-9	
Calcium	ND	mg/L	0.10	0.011	1	10/20/19 16:44	10/22/19 22:47	7440-70-2	
Chromium	0.00088J	mg/L	0.010	0.00039	1	10/20/19 16:44	10/22/19 22:47	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	10/20/19 16:44	10/22/19 22:47	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	10/20/19 16:44	10/22/19 22:47	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	10/20/19 16:44	10/22/19 22:47	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	10/20/19 16:44	10/22/19 22:47	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	10/20/19 16:44	10/22/19 22:47	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	10/20/19 16:44	10/22/19 22:47	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	10/23/19 10:07	10/23/19 15:11	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	18.0	mg/L	10.0	10.0	1		10/18/19 10:47		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	0.078J	mg/L	1.0	0.024	1		10/22/19 01:01	16887-00-6	
Fluoride	ND	mg/L	0.30	0.029	1		10/22/19 01:01	16984-48-8	
Sulfate	0.019J	mg/L	1.0	0.017	1		10/22/19 01:01	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant McDonough AP-2,3/4

Pace Project No.: 2624397

QC Batch: 37300

Analysis Method: EPA 7470A

QC Batch Method: EPA 7470A

Analysis Description: 7470 Mercury

Associated Lab Samples: 2624397001, 2624397002, 2624397003

METHOD BLANK: 168761

Matrix: Water

Associated Lab Samples: 2624397001, 2624397002, 2624397003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	10/23/19 14:38	

LABORATORY CONTROL SAMPLE: 168762

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0024	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 168763 168764

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2624388001 Result	Spike Conc.	Spike Conc.	Conc.								
Mercury	mg/L	ND	0.0025	0.0025	0.0024	0.0024	97	96	75-125	2	20		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant McDonough AP-2,3/4
Pace Project No.: 2624397

QC Batch: 37136 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2624397001, 2624397002, 2624397003

METHOD BLANK: 167849 Matrix: Water
Associated Lab Samples: 2624397001, 2624397002, 2624397003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	10/22/19 18:23	
Arsenic	mg/L	0.00059J	0.0050	0.00035	10/22/19 18:23	
Barium	mg/L	ND	0.010	0.00049	10/22/19 18:23	
Beryllium	mg/L	ND	0.0030	0.000074	10/22/19 18:23	
Boron	mg/L	ND	0.040	0.0049	10/22/19 18:23	
Cadmium	mg/L	ND	0.0025	0.00011	10/22/19 18:23	
Calcium	mg/L	ND	0.10	0.011	10/22/19 18:23	
Chromium	mg/L	ND	0.010	0.00039	10/22/19 18:23	
Cobalt	mg/L	ND	0.0050	0.00030	10/22/19 18:23	
Lead	mg/L	ND	0.0050	0.000046	10/22/19 18:23	
Lithium	mg/L	ND	0.030	0.00078	10/22/19 18:23	
Molybdenum	mg/L	ND	0.010	0.00095	10/22/19 18:23	
Selenium	mg/L	ND	0.010	0.0013	10/22/19 18:23	
Thallium	mg/L	ND	0.0010	0.000052	10/22/19 18:23	

LABORATORY CONTROL SAMPLE: 167850

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.098	98	80-120	
Arsenic	mg/L	0.1	0.098	98	80-120	
Barium	mg/L	0.1	0.098	98	80-120	
Beryllium	mg/L	0.1	0.099	99	80-120	
Boron	mg/L	1	0.96	96	80-120	
Cadmium	mg/L	0.1	0.097	97	80-120	
Calcium	mg/L	1	0.96	96	80-120	
Chromium	mg/L	0.1	0.098	98	80-120	
Cobalt	mg/L	0.1	0.098	98	80-120	
Lead	mg/L	0.1	0.098	98	80-120	
Lithium	mg/L	0.1	0.095	95	80-120	
Molybdenum	mg/L	0.1	0.10	101	80-120	
Selenium	mg/L	0.1	0.10	101	80-120	
Thallium	mg/L	0.1	0.098	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 168476 168477

Parameter	Units	2624389004 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Antimony	mg/L	ND	0.1	0.1	0.098	0.097	97	97	75-125	0	20	

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QUALITY CONTROL DATA

Project: Plant McDonough AP-2,3/4

Pace Project No.: 2624397

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 168476		168477		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		2624389004 Result	MS Spike Conc.	MSD Spike Conc.									
Arsenic	mg/L	0.00063J	0.1	0.1	0.095	0.098	95	97	75-125	3	20		
Barium	mg/L	0.0091J	0.1	0.1	0.11	0.11	100	103	75-125	3	20		
Beryllium	mg/L	ND	0.1	0.1	0.092	0.094	92	94	75-125	2	20		
Boron	mg/L	ND	1	1	0.89	0.94	88	93	75-125	6	20		
Cadmium	mg/L	ND	0.1	0.1	0.099	0.098	99	98	75-125	0	20		
Calcium	mg/L	3.7	1	1	4.5	4.5	88	82	75-125	1	20		
Chromium	mg/L	0.0083J	0.1	0.1	0.11	0.11	97	100	75-125	2	20		
Cobalt	mg/L	0.00097J	0.1	0.1	0.096	0.096	95	95	75-125	0	20		
Lead	mg/L	ND	0.1	0.1	0.095	0.098	95	98	75-125	3	20		
Lithium	mg/L	ND	0.1	0.1	0.092	0.094	91	93	75-125	3	20		
Molybdenum	mg/L	ND	0.1	0.1	0.10	0.10	100	100	75-125	1	20		
Selenium	mg/L	ND	0.1	0.1	0.093	0.10	93	100	75-125	7	20		
Thallium	mg/L	ND	0.1	0.1	0.095	0.098	95	98	75-125	3	20		

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QUALITY CONTROL DATA

Project: Plant McDonough AP-2,3/4
Pace Project No.: 2624397

QC Batch: 37138 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2624397001, 2624397002, 2624397003

METHOD BLANK: 167857 Matrix: Water
Associated Lab Samples: 2624397001, 2624397002, 2624397003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.024	10/21/19 16:11	
Fluoride	mg/L	ND	0.30	0.029	10/21/19 16:11	
Sulfate	mg/L	ND	1.0	0.017	10/21/19 16:11	

LABORATORY CONTROL SAMPLE: 167858

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	10	9.9	99	90-110	
Fluoride	mg/L	10	10.2	102	90-110	
Sulfate	mg/L	10	9.9	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 167859 167860

Parameter	Units	2624388001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	20.9	10	10	28.1	28.1	72	72	90-110	0	15	M1
Fluoride	mg/L	ND	10	10	10.0	10.1	100	101	90-110	1	15	

MATRIX SPIKE SAMPLE: 167861

Parameter	Units	2624389005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L		2.2	10	12.2	100	90-110
Fluoride	mg/L		ND	10	10.3	103	90-110
Sulfate	mg/L		5.2	10	14.8	96	90-110

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QUALIFIERS

Project: Plant McDonough AP-2,3/4

Pace Project No.: 2624397

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant McDonough AP-2,3/4

Pace Project No.: 2624397

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624397001	DGWA-70A	EPA 3005A	37136	EPA 6020B	37255
2624397002	DGWA-71	EPA 3005A	37136	EPA 6020B	37255
2624397003	FB-1	EPA 3005A	37136	EPA 6020B	37255
2624397001	DGWA-70A	EPA 7470A	37300	EPA 7470A	37416
2624397002	DGWA-71	EPA 7470A	37300	EPA 7470A	37416
2624397003	FB-1	EPA 7470A	37300	EPA 7470A	37416
2624397001	DGWA-70A	SM 2540C	37181		
2624397002	DGWA-71	SM 2540C	37181		
2624397003	FB-1	SM 2540C	37181		
2624397001	DGWA-70A	EPA 300.0	37138		
2624397002	DGWA-71	EPA 300.0	37138		
2624397003	FB-1	EPA 300.0	37138		

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Sample Condition Upon Receipt

WO#: 2624397

Client Name: GAPower

PM: BM Due Date: 10/23/19 CLIENT: GAPower-CCR

Courier: [] Fed Ex [] UPS [] USPS [] Client [x] Commercial [] Pace Other

Tracking #: _____

Custody Seal on Cooler/Box Present: [x] yes [] no Seals intact: [x] yes [] no

Packing Material: [] Bubble Wrap [x] Bubble Bags [] None [] Other

Thermometer Used 217 Type of Ice: [x] Wet Blue None [] Samples on ice, cooling process has begun

Cooler Temperature 63°C Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Date and initials of person examining contents: 10/16/19

Chain of Custody Present:	[x] Yes [] No [] N/A	1.
Chain of Custody Filled Out:	[x] Yes [] No [] N/A	2.
Chain of Custody Relinquished:	[x] Yes [] No [] N/A	3.
Sampler Name & Signature on COC:	[x] Yes [] No [] N/A	4.
Samples Arrived within Hold Time:	[x] Yes [] No [] N/A	5.
Short Hold Time Analysis (<72hr):	[x] Yes [] No [] N/A	6.
Rush Turn Around Time Requested:	[] Yes [x] No [] N/A	7.
Sufficient Volume:	[x] Yes [] No [] N/A	8.
Correct Containers Used:	[x] Yes [] No [] N/A	9.
-Pace Containers Used:	[] Yes [] No [] N/A	
Containers Intact:	[x] Yes [] No [] N/A	10.
Filtered volume received for Dissolved tests	[] Yes [] No [x] N/A	11.
Sample Labels match COC:	[] Yes [] No [] N/A	12.
-Includes date/time/ID/Analysis Matrix:	[x] Yes [] No [] N/A	
All containers needing preservation have been checked.	[x] Yes [] No [] N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	[x] Yes [] No [] N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	[x] Yes [] No	Initial when completed
		Lot # of added preservative
Samples checked for dechlorination:	[] Yes [] No [x] N/A	14.
Headspace in VOA Vials (>6mm):	[] Yes [] No [x] N/A	15.
Trip Blank Present:	[] Yes [] No [x] N/A	16.
Trip Blank Custody Seals Present	[] Yes [] No [x] N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____

Date: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

December 30, 2019

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

RE: Project: Plant McDonough AP-1
Pace Project No.: 2624496

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on October 17, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kevin Herring for
Betsy McDaniel
betsy.mcdaniel@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: Daniela Herrera, Golder
Ben Hodges, Georgia Power
Jimmy Jones, Golder Associates Inc.
Kristen Jurinko
Julie Lehrman, Golder Associates Inc.
Dawn Prell, Golder Associates Inc.
Tim Richards, Golder Associates - Atlanta
Rebecca Thornton, Pace Analytical Atlanta



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CERTIFICATIONS

Project: Plant McDonough AP-1

Pace Project No.: 2624496

Pace Analytical Services Atlanta

110 Technology Parkway Peachtree Corners, GA 30092

Florida DOH Certification #: E87315

Georgia DW Inorganics Certification #: 812

Georgia DW Microbiology Certification #: 812

North Carolina Certification #: 381

South Carolina Certification #: 98011001

Virginia Certification #: 460204

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Plant McDonough AP-1
Pace Project No.: 2624496

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624496001	DGWC-68A	Water	10/16/19 16:10	10/17/19 12:00
2624496002	DGWC-69	Water	10/16/19 15:25	10/17/19 12:00
2624496003	FD-3	Water	10/16/19 00:00	10/17/19 12:00

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SAMPLE ANALYTE COUNT

Project: Plant McDonough AP-1

Pace Project No.: 2624496

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2624496001	DGWC-68A	EPA 6020B	CSW	13
		EPA 7470A	DRB	1
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624496002	DGWC-69	EPA 6020B	CSW	13
		EPA 7470A	DRB	1
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624496003	FD-3	EPA 6020B	CSW	13
		EPA 7470A	DRB	1
		SM 2540C	MZP	1
		EPA 300.0	MWB	3

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ANALYTICAL RESULTS

Project: Plant McDonough AP-1
Pace Project No.: 2624496

Sample: DGWC-68A		Lab ID: 2624496001		Collected: 10/16/19 16:10		Received: 10/17/19 12:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Arsenic	ND	mg/L	0.0050	0.00035	1	10/21/19 16:03	10/23/19 23:17	7440-38-2		
Barium	0.089	mg/L	0.010	0.00049	1	10/21/19 16:03	10/23/19 23:17	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	10/21/19 16:03	10/25/19 11:47	7440-41-7		
Boron	1.5	mg/L	0.040	0.0049	1	10/21/19 16:03	10/23/19 23:17	7440-42-8		
Cadmium	0.00017J	mg/L	0.0025	0.00011	1	10/21/19 16:03	10/23/19 23:17	7440-43-9		
Calcium	49.7	mg/L	5.0	0.55	50	10/21/19 16:03	10/23/19 23:23	7440-70-2		
Chromium	ND	mg/L	0.010	0.00039	1	10/21/19 16:03	10/23/19 23:17	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	10/21/19 16:03	10/23/19 23:17	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	10/21/19 16:03	10/23/19 23:17	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	10/21/19 16:03	10/25/19 11:47	7439-93-2		
Molybdenum	0.22	mg/L	0.010	0.00095	1	10/21/19 16:03	10/23/19 23:17	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	10/21/19 16:03	10/23/19 23:17	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	10/21/19 16:03	10/23/19 23:17	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	10/23/19 10:07	10/23/19 15:37	7439-97-6		
2540C Total Dissolved Solids		Analytical Method: SM 2540C								
Total Dissolved Solids	218	mg/L	10.0	10.0	1		10/23/19 15:49			
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Chloride	4.2	mg/L	1.0	0.024	1		10/25/19 07:01	16887-00-6		
Fluoride	0.093J	mg/L	0.30	0.029	1		10/25/19 07:01	16984-48-8		
Sulfate	32.1	mg/L	1.0	0.017	1		10/25/19 07:01	14808-79-8		

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ANALYTICAL RESULTS

Project: Plant McDonough AP-1
Pace Project No.: 2624496

Sample: DGWC-69 Lab ID: 2624496002 Collected: 10/16/19 15:25 Received: 10/17/19 12:00 Matrix: Water									
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
6020B MET ICPMS Analytical Method: EPA 6020B Preparation Method: EPA 3005A									
Arsenic	0.023	mg/L	0.0050	0.00035	1	10/22/19 14:30	10/24/19 16:51	7440-38-2	
Barium	0.10	mg/L	0.010	0.00049	1	10/22/19 14:30	10/24/19 16:51	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	10/22/19 14:30	10/24/19 16:51	7440-41-7	
Boron	0.38	mg/L	0.040	0.0049	1	10/22/19 14:30	10/24/19 16:51	7440-42-8	
Cadmium	0.00017J	mg/L	0.0025	0.00011	1	10/22/19 14:30	10/24/19 16:51	7440-43-9	
Calcium	16.2	mg/L	5.0	0.55	50	10/22/19 14:30	10/24/19 16:57	7440-70-2	
Chromium	ND	mg/L	0.010	0.00039	1	10/22/19 14:30	10/24/19 16:51	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	10/22/19 14:30	10/24/19 16:51	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	10/22/19 14:30	10/24/19 16:51	7439-92-1	
Lithium	0.0032J	mg/L	0.030	0.00078	1	10/22/19 14:30	10/24/19 16:51	7439-93-2	
Molybdenum	0.010	mg/L	0.010	0.00095	1	10/22/19 14:30	10/24/19 16:51	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	10/22/19 14:30	10/24/19 16:51	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	10/22/19 14:30	10/24/19 16:51	7440-28-0	
7470 Mercury Analytical Method: EPA 7470A Preparation Method: EPA 7470A									
Mercury	ND	mg/L	0.00050	0.00014	1	10/23/19 10:07	10/23/19 15:39	7439-97-6	
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	108	mg/L	10.0	10.0	1		10/23/19 15:50		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Chloride	4.7	mg/L	1.0	0.024	1		10/25/19 08:52	16887-00-6	
Fluoride	0.13J	mg/L	0.30	0.029	1		10/25/19 08:52	16984-48-8	
Sulfate	13.3	mg/L	1.0	0.017	1		10/25/19 08:52	14808-79-8	

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ANALYTICAL RESULTS

Project: Plant McDonough AP-1
Pace Project No.: 2624496

Sample: FD-3		Lab ID: 2624496003		Collected: 10/16/19 00:00		Received: 10/17/19 12:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Arsenic	ND	mg/L	0.0050	0.00035	1	10/22/19 14:30	10/24/19 17:53	7440-38-2		
Barium	0.089	mg/L	0.010	0.00049	1	10/22/19 14:30	10/24/19 17:53	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	10/22/19 14:30	10/24/19 17:53	7440-41-7		
Boron	1.8	mg/L	0.040	0.0049	1	10/22/19 14:30	10/24/19 17:53	7440-42-8		
Cadmium	0.00014J	mg/L	0.0025	0.00011	1	10/22/19 14:30	10/24/19 17:53	7440-43-9		
Calcium	47.2	mg/L	5.0	0.55	50	10/22/19 14:30	10/24/19 17:59	7440-70-2		
Chromium	ND	mg/L	0.010	0.00039	1	10/22/19 14:30	10/24/19 17:53	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	10/22/19 14:30	10/24/19 17:53	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	10/22/19 14:30	10/24/19 17:53	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	10/22/19 14:30	10/24/19 17:53	7439-93-2		
Molybdenum	0.21	mg/L	0.010	0.00095	1	10/22/19 14:30	10/24/19 17:53	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	10/22/19 14:30	10/24/19 17:53	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	10/22/19 14:30	10/24/19 17:53	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	10/23/19 10:07	10/23/19 15:42	7439-97-6		
2540C Total Dissolved Solids		Analytical Method: SM 2540C								
Total Dissolved Solids	247	mg/L	10.0	10.0	1		10/23/19 15:50			
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Chloride	4.2	mg/L	1.0	0.024	1		10/25/19 09:14	16887-00-6		
Fluoride	0.12J	mg/L	0.30	0.029	1		10/25/19 09:14	16984-48-8		
Sulfate	32.0	mg/L	1.0	0.017	1		10/25/19 09:14	14808-79-8		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant McDonough AP-1

Pace Project No.: 2624496

QC Batch: 37300 Analysis Method: EPA 7470A
QC Batch Method: EPA 7470A Analysis Description: 7470 Mercury
Associated Lab Samples: 2624496001, 2624496002, 2624496003

METHOD BLANK: 168761 Matrix: Water

Associated Lab Samples: 2624496001, 2624496002, 2624496003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	10/23/19 14:38	

LABORATORY CONTROL SAMPLE: 168762

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0024	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 168763 168764

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2624388001 Result	Spike Conc.	Spike Conc.	Conc.								
Mercury	mg/L	ND	0.0025	0.0025	0.0024	0.0024	97	96	75-125	2	20		

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QUALITY CONTROL DATA

Project: Plant McDonough AP-1
Pace Project No.: 2624496

QC Batch: 37286 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2624496001

METHOD BLANK: 168679 Matrix: Water
Associated Lab Samples: 2624496001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/L	ND	0.0050	0.00035	10/23/19 18:31	
Barium	mg/L	ND	0.010	0.00049	10/23/19 18:31	
Beryllium	mg/L	ND	0.0030	0.000074	10/23/19 18:31	
Boron	mg/L	ND	0.040	0.0049	10/23/19 18:31	
Cadmium	mg/L	ND	0.0025	0.00011	10/23/19 18:31	
Calcium	mg/L	ND	0.10	0.011	10/23/19 18:31	
Chromium	mg/L	ND	0.010	0.00039	10/23/19 18:31	
Cobalt	mg/L	ND	0.0050	0.00030	10/23/19 18:31	
Lead	mg/L	ND	0.0050	0.000046	10/23/19 18:31	
Lithium	mg/L	ND	0.030	0.00078	10/23/19 18:31	
Molybdenum	mg/L	ND	0.010	0.00095	10/23/19 18:31	
Selenium	mg/L	ND	0.010	0.0013	10/23/19 18:31	
Thallium	mg/L	ND	0.0010	0.000052	10/23/19 18:31	

LABORATORY CONTROL SAMPLE: 168680

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.1	0.098	98	80-120	
Barium	mg/L	0.1	0.10	101	80-120	
Beryllium	mg/L	0.1	0.10	103	80-120	
Boron	mg/L	1	0.99	99	80-120	
Cadmium	mg/L	0.1	0.10	100	80-120	
Calcium	mg/L	1	1.0	101	80-120	
Chromium	mg/L	0.1	0.099	99	80-120	
Cobalt	mg/L	0.1	0.098	98	80-120	
Lead	mg/L	0.1	0.10	101	80-120	
Lithium	mg/L	0.1	0.10	103	80-120	
Molybdenum	mg/L	0.1	0.10	101	80-120	
Selenium	mg/L	0.1	0.095	95	80-120	
Thallium	mg/L	0.1	0.10	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 168681 168682

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2624484003	Result	Spike Conc.	Spike Conc.								
Arsenic	mg/L	0.00040J	0.1	0.1	0.10	0.10	100	100	75-125	0	20		
Barium	mg/L	0.037	0.1	0.1	0.15	0.14	109	107	75-125	1	20		
Beryllium	mg/L	0.00015J	0.1	0.1	0.095	0.094	95	94	75-125	0	20		

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QUALITY CONTROL DATA

Project: Plant McDonough AP-1
Pace Project No.: 2624496

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 168681		168682		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		2624484003 Result	MS Spike Conc.	MSD Spike Conc.									
Boron	mg/L	2.2	1	1	3.1	3.1	90	90	75-125	0	20		
Cadmium	mg/L	ND	0.1	0.1	0.10	0.10	100	100	75-125	1	20		
Calcium	mg/L	61.2	1	1	62.7	66.1	145	485	75-125	5	20	M6	
Chromium	mg/L	0.0064J	0.1	0.1	0.11	0.10	100	98	75-125	2	20		
Cobalt	mg/L	ND	0.1	0.1	0.097	0.097	97	97	75-125	0	20		
Lead	mg/L	ND	0.1	0.1	0.097	0.097	97	97	75-125	0	20		
Lithium	mg/L	0.0022J	0.1	0.1	0.096	0.095	94	93	75-125	1	20		
Molybdenum	mg/L	ND	0.1	0.1	0.10	0.10	104	101	75-125	3	20		
Selenium	mg/L	ND	0.1	0.1	0.096	0.096	96	95	75-125	0	20		
Thallium	mg/L	ND	0.1	0.1	0.098	0.098	98	98	75-125	0	20		

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QUALITY CONTROL DATA

Project: Plant McDonough AP-1
Pace Project No.: 2624496

QC Batch: 37347 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2624496002, 2624496003

METHOD BLANK: 168971 Matrix: Water
Associated Lab Samples: 2624496002, 2624496003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/L	0.0010J	0.0050	0.00035	10/24/19 16:36	
Barium	mg/L	ND	0.010	0.00049	10/24/19 16:36	
Beryllium	mg/L	ND	0.0030	0.000074	10/24/19 16:36	
Boron	mg/L	ND	0.040	0.0049	10/24/19 16:36	
Cadmium	mg/L	ND	0.0025	0.00011	10/24/19 16:36	
Calcium	mg/L	ND	0.10	0.011	10/24/19 16:36	
Chromium	mg/L	ND	0.010	0.00039	10/24/19 16:36	
Cobalt	mg/L	ND	0.0050	0.00030	10/24/19 16:36	
Lead	mg/L	ND	0.0050	0.000046	10/24/19 16:36	
Lithium	mg/L	ND	0.030	0.00078	10/24/19 16:36	
Molybdenum	mg/L	ND	0.010	0.00095	10/24/19 16:36	
Selenium	mg/L	ND	0.010	0.0013	10/24/19 16:36	
Thallium	mg/L	ND	0.0010	0.000052	10/24/19 16:36	

LABORATORY CONTROL SAMPLE: 168972

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.1	0.098	98	80-120	
Barium	mg/L	0.1	0.10	101	80-120	
Beryllium	mg/L	0.1	0.11	108	80-120	
Boron	mg/L	1	1.1	107	80-120	
Cadmium	mg/L	0.1	0.097	97	80-120	
Calcium	mg/L	1	1.0	101	80-120	
Chromium	mg/L	0.1	0.10	102	80-120	
Cobalt	mg/L	0.1	0.098	98	80-120	
Lead	mg/L	0.1	0.098	98	80-120	
Lithium	mg/L	0.1	0.11	108	80-120	
Molybdenum	mg/L	0.1	0.10	102	80-120	
Selenium	mg/L	0.1	0.097	97	80-120	
Thallium	mg/L	0.1	0.10	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 168973 168974

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		2624496002 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
Arsenic	mg/L	0.023	0.1	0.1	0.12	0.12	99	96	75-125	3	20	
Barium	mg/L	0.10	0.1	0.1	0.22	0.21	111	106	75-125	3	20	
Beryllium	mg/L	ND	0.1	0.1	0.11	0.11	113	110	75-125	3	20	

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QUALITY CONTROL DATA

Project: Plant McDonough AP-1

Pace Project No.: 2624496

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 168973		168974		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2624496002 Result	MS Spike Conc.	MSD Spike Conc.									
Boron	mg/L	0.38	1	1	1.5	1.5	109	109	75-125	0	20		
Cadmium	mg/L	0.00017J	0.1	0.1	0.099	0.097	99	97	75-125	2	20		
Calcium	mg/L	16.2	1	1	17.3	17.0	113	77	75-125	2	20		
Chromium	mg/L	ND	0.1	0.1	0.10	0.10	102	100	75-125	2	20		
Cobalt	mg/L	ND	0.1	0.1	0.097	0.097	97	97	75-125	0	20		
Lead	mg/L	ND	0.1	0.1	0.099	0.097	99	97	75-125	2	20		
Lithium	mg/L	0.0032J	0.1	0.1	0.11	0.11	111	107	75-125	4	20		
Molybdenum	mg/L	0.010	0.1	0.1	0.11	0.11	104	101	75-125	2	20		
Selenium	mg/L	ND	0.1	0.1	0.095	0.093	95	93	75-125	2	20		
Thallium	mg/L	ND	0.1	0.1	0.10	0.098	101	98	75-125	3	20		

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QUALITY CONTROL DATA

Project: Plant McDonough AP-1
Pace Project No.: 2624496

QC Batch: 37419 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 2624496001, 2624496002, 2624496003

LABORATORY CONTROL SAMPLE: 169291

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	391	98	84-108	

SAMPLE DUPLICATE: 169292

Parameter	Units	2624484007 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	ND	ND		10	

SAMPLE DUPLICATE: 169293

Parameter	Units	2624491004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	500	501	0	10	

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QUALITY CONTROL DATA

Project: Plant McDonough AP-1
Pace Project No.: 2624496

QC Batch: 37483 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2624496001, 2624496002, 2624496003

METHOD BLANK: 169745 Matrix: Water
Associated Lab Samples: 2624496001, 2624496002, 2624496003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.024	10/25/19 02:57	
Fluoride	mg/L	ND	0.30	0.029	10/25/19 02:57	
Sulfate	mg/L	0.054J	1.0	0.017	10/25/19 02:57	

LABORATORY CONTROL SAMPLE: 169746

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	93	90-110	
Fluoride	mg/L	5	4.8	97	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 169747 169748

Parameter	Units	2624451001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	27.7	5	5	33.9	33.8	124	123	90-110	0	15	M1
Fluoride	mg/L	0.38	5	5	11.1	11.4	214	221	90-110	3	15	M1
Sulfate	mg/L	ND	5	5	ND	ND	0	0	90-110		15	M1

MATRIX SPIKE SAMPLE: 169749

Parameter	Units	2624451002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	4.3	5	13.6	185	90-110	M1
Fluoride	mg/L	0.57	5	10.8	204	90-110	M1
Sulfate	mg/L	ND	5	ND	0	90-110	M1

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QUALIFIERS

Project: Plant McDonough AP-1

Pace Project No.: 2624496

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant McDonough AP-1
Pace Project No.: 2624496

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624496001	DGWC-68A	EPA 3005A	37286	EPA 6020B	37308
2624496002	DGWC-69	EPA 3005A	37347	EPA 6020B	37377
2624496003	FD-3	EPA 3005A	37347	EPA 6020B	37377
2624496001	DGWC-68A	EPA 7470A	37300	EPA 7470A	37416
2624496002	DGWC-69	EPA 7470A	37300	EPA 7470A	37416
2624496003	FD-3	EPA 7470A	37300	EPA 7470A	37416
2624496001	DGWC-68A	SM 2540C	37419		
2624496002	DGWC-69	SM 2540C	37419		
2624496003	FD-3	SM 2540C	37419		
2624496001	DGWC-68A	EPA 300.0	37483		
2624496002	DGWC-69	EPA 300.0	37483		
2624496003	FD-3	EPA 300.0	37483		

REPORT OF LABORATORY ANALYSIS

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WO#: 2624496
RM: BM
CLIENT: GAPower-CCR
Due Date: 10/24/19
Proj. Name:



Client Name: GA Power

Courier: Fed Ex UPS USPS Client Commercial Pace Other

Tracking #: _____

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used 214 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temperature 1.0°C Biological Tissue is Frozen: Yes No
Temp should be above freezing to 6°C

Date and Initials of person examining contents: 10/12/19 CDH

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11. <u>Field Filtered Nets + DOC</u>
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix:	<u>W</u>	
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
exceptions: VOA, coliform, <u>DOC</u> , O&G, WI-DRO (water)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed
		Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: _____ Field Data Required? Y / N
Person Contacted: _____ Date/Time: _____
Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

December 30, 2019

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

RE: Project: Plant McDonough AP-1
Pace Project No.: 2624571

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on October 18, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

This report was revised 11/12/19 to remove Antimony as it was not requested on the COC.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kevin Herring for
Betsy McDaniel
betsy.mcdaniel@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: Daniela Herrera, Golder
Ben Hodges, Georgia Power
Jimmy Jones, Golder Associates Inc.
Kristen Jurinko
Julie Lehrman, Golder Associates Inc.
Dawn Prell, Golder Associates Inc.

Tim Richards, Golder Associates - Atlanta
Rebecca Thornton, Pace Analytical Atlanta



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Plant McDonough AP-1
Pace Project No.: 2624571

Pace Analytical Services Atlanta

110 Technology Parkway Peachtree Corners, GA 30092
Florida DOH Certification #: E87315
Georgia DW Inorganics Certification #: 812
Georgia DW Microbiology Certification #: 812

North Carolina Certification #: 381
South Carolina Certification #: 98011001
Virginia Certification #: 460204

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Plant McDonough AP-1

Pace Project No.: 2624571

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624571001	DGWC-67	Water	10/17/19 15:45	10/18/19 15:40
2624571002	EB-2	Water	10/17/19 16:00	10/18/19 15:40
2624571003	DGWC-37	Water	10/18/19 09:05	10/18/19 15:40
2624571004	DGWC-38	Water	10/18/19 09:00	10/18/19 15:40
2624571005	DGWC-39	Water	10/18/19 10:40	10/18/19 15:40
2624571006	DGWC-40	Water	10/18/19 12:45	10/18/19 15:40
2624571007	EB-3	Water	10/18/19 13:25	10/18/19 15:40

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SAMPLE ANALYTE COUNT

Project: Plant McDonough AP-1

Pace Project No.: 2624571

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2624571001	DGWC-67	EPA 6020B	CSW	13
		EPA 7470A	DRB	1
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624571002	EB-2	EPA 6020B	CSW	13
		EPA 7470A	DRB	1
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624571003	DGWC-37	EPA 6020B	CSW	13
		EPA 7470A	DRB	1
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624571004	DGWC-38	EPA 6020B	CSW	13
		EPA 7470A	DRB	1
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624571005	DGWC-39	EPA 6020B	CSW	13
		EPA 7470A	DRB	1
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624571006	DGWC-40	EPA 6020B	CSW	13
		EPA 7470A	DRB	1
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624571007	EB-3	EPA 6020B	CSW	13
		EPA 7470A	DRB	1
		SM 2540C	MZP	1
		EPA 300.0	MWB	3

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ANALYTICAL RESULTS

Project: Plant McDonough AP-1
Pace Project No.: 2624571

Sample: DGWC-67 Lab ID: 2624571001 Collected: 10/17/19 15:45 Received: 10/18/19 15:40 Matrix: Water									
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
6020B MET ICPMS Analytical Method: EPA 6020B Preparation Method: EPA 3005A									
Arsenic	0.00042J	mg/L	0.0050	0.00035	1	10/23/19 16:22	10/24/19 21:36	7440-38-2	B
Barium	0.10	mg/L	0.010	0.00049	1	10/23/19 16:22	10/24/19 21:36	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	10/23/19 16:22	10/24/19 21:36	7440-41-7	
Boron	3.6	mg/L	0.040	0.0049	1	10/23/19 16:22	10/24/19 21:36	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	10/23/19 16:22	10/24/19 21:36	7440-43-9	
Calcium	42.4	mg/L	5.0	0.55	50	10/23/19 16:22	10/24/19 21:42	7440-70-2	
Chromium	ND	mg/L	0.010	0.00039	1	10/23/19 16:22	10/24/19 21:36	7440-47-3	
Cobalt	0.0013J	mg/L	0.0050	0.00030	1	10/23/19 16:22	10/24/19 21:36	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	10/23/19 16:22	10/24/19 21:36	7439-92-1	
Lithium	0.0047J	mg/L	0.030	0.00078	1	10/23/19 16:22	10/24/19 21:36	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	10/23/19 16:22	10/24/19 21:36	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	10/23/19 16:22	10/24/19 21:36	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	10/23/19 16:22	10/24/19 21:36	7440-28-0	
7470 Mercury Analytical Method: EPA 7470A Preparation Method: EPA 7470A									
Mercury	ND	mg/L	0.00050	0.00014	1	10/24/19 17:51	10/25/19 17:12	7439-97-6	
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	281	mg/L	10.0	10.0	1		10/25/19 14:38		H1
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Chloride	6.9	mg/L	1.0	0.024	1		10/29/19 07:51	16887-00-6	
Fluoride	0.038J	mg/L	0.30	0.029	1		10/29/19 07:51	16984-48-8	
Sulfate	99.4	mg/L	10.0	0.17	10		10/29/19 20:24	14808-79-8	

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ANALYTICAL RESULTS

Project: Plant McDonough AP-1
Pace Project No.: 2624571

Sample: EB-2 Lab ID: 2624571002 Collected: 10/17/19 16:00 Received: 10/18/19 15:40 Matrix: Water									
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
6020B MET ICPMS Analytical Method: EPA 6020B Preparation Method: EPA 3005A									
Arsenic	ND	mg/L	0.0050	0.00035	1	10/23/19 16:22	10/24/19 21:47	7440-38-2	B
Barium	ND	mg/L	0.010	0.00049	1	10/23/19 16:22	10/24/19 21:47	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	10/23/19 16:22	10/24/19 21:47	7440-41-7	
Boron	ND	mg/L	0.040	0.0049	1	10/23/19 16:22	10/24/19 21:47	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	10/23/19 16:22	10/24/19 21:47	7440-43-9	
Calcium	0.032J	mg/L	0.10	0.011	1	10/23/19 16:22	10/24/19 21:47	7440-70-2	
Chromium	ND	mg/L	0.010	0.00039	1	10/23/19 16:22	10/24/19 21:47	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	10/23/19 16:22	10/24/19 21:47	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	10/23/19 16:22	10/24/19 21:47	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	10/23/19 16:22	10/24/19 21:47	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	10/23/19 16:22	10/24/19 21:47	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	10/23/19 16:22	10/24/19 21:47	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	10/23/19 16:22	10/24/19 21:47	7440-28-0	
7470 Mercury Analytical Method: EPA 7470A Preparation Method: EPA 7470A									
Mercury	ND	mg/L	0.00050	0.00014	1	10/24/19 17:51	10/25/19 17:14	7439-97-6	
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	ND	mg/L	10.0	10.0	1		10/25/19 14:38		H1
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Chloride	0.028J	mg/L	1.0	0.024	1		10/29/19 09:20	16887-00-6	
Fluoride	ND	mg/L	0.30	0.029	1		10/29/19 09:20	16984-48-8	
Sulfate	ND	mg/L	1.0	0.017	1		10/29/19 09:20	14808-79-8	

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ANALYTICAL RESULTS

Project: Plant McDonough AP-1
Pace Project No.: 2624571

Sample: DGWC-37		Lab ID: 2624571003		Collected: 10/18/19 09:05		Received: 10/18/19 15:40		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Arsenic	ND	mg/L	0.0050	0.00035	1	10/23/19 16:22	10/24/19 21:53	7440-38-2	
Barium	0.079	mg/L	0.010	0.00049	1	10/23/19 16:22	10/24/19 21:53	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	10/23/19 16:22	10/24/19 21:53	7440-41-7	
Boron	1.3	mg/L	0.040	0.0049	1	10/23/19 16:22	10/24/19 21:53	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	10/23/19 16:22	10/24/19 21:53	7440-43-9	
Calcium	48.8	mg/L	5.0	0.55	50	10/23/19 16:22	10/24/19 21:59	7440-70-2	
Chromium	ND	mg/L	0.010	0.00039	1	10/23/19 16:22	10/24/19 21:53	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	10/23/19 16:22	10/24/19 21:53	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	10/23/19 16:22	10/24/19 21:53	7439-92-1	
Lithium	0.0026J	mg/L	0.030	0.00078	1	10/23/19 16:22	10/24/19 21:53	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	10/23/19 16:22	10/24/19 21:53	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	10/23/19 16:22	10/24/19 21:53	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	10/23/19 16:22	10/24/19 21:53	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	10/24/19 17:51	10/25/19 17:17	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	269	mg/L	10.0	10.0	1		10/25/19 14:38		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	5.8	mg/L	1.0	0.024	1		10/29/19 09:42	16887-00-6	
Fluoride	0.075J	mg/L	0.30	0.029	1		10/29/19 09:42	16984-48-8	
Sulfate	76.4	mg/L	10.0	0.17	10		10/29/19 22:15	14808-79-8	

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ANALYTICAL RESULTS

Project: Plant McDonough AP-1
Pace Project No.: 2624571

Sample: DGWC-38		Lab ID: 2624571004		Collected: 10/18/19 09:00		Received: 10/18/19 15:40		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Arsenic	ND	mg/L	0.0050	0.00035	1	10/23/19 16:22	10/24/19 22:05	7440-38-2		
Barium	0.032	mg/L	0.010	0.00049	1	10/23/19 16:22	10/24/19 22:05	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	10/23/19 16:22	10/24/19 22:05	7440-41-7		
Boron	3.1	mg/L	0.040	0.0049	1	10/23/19 16:22	10/24/19 22:05	7440-42-8		
Cadmium	0.00016J	mg/L	0.0025	0.00011	1	10/23/19 16:22	10/24/19 22:05	7440-43-9		
Calcium	83.8	mg/L	5.0	0.55	50	10/23/19 16:22	10/24/19 22:10	7440-70-2		
Chromium	0.00092J	mg/L	0.010	0.00039	1	10/23/19 16:22	10/24/19 22:05	7440-47-3		
Cobalt	0.0016J	mg/L	0.0050	0.00030	1	10/23/19 16:22	10/24/19 22:05	7440-48-4		
Lead	0.000074J	mg/L	0.0050	0.000046	1	10/23/19 16:22	10/24/19 22:05	7439-92-1		
Lithium	0.0032J	mg/L	0.030	0.00078	1	10/23/19 16:22	10/24/19 22:05	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	10/23/19 16:22	10/24/19 22:05	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	10/23/19 16:22	10/24/19 22:05	7782-49-2		
Thallium	0.00010J	mg/L	0.0010	0.000052	1	10/23/19 16:22	10/24/19 22:05	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	10/24/19 17:51	10/25/19 17:24	7439-97-6		
2540C Total Dissolved Solids		Analytical Method: SM 2540C								
Total Dissolved Solids	494	mg/L	10.0	10.0	1		10/25/19 14:38			
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Chloride	8.6	mg/L	1.0	0.024	1		10/29/19 10:04	16887-00-6		
Fluoride	0.073J	mg/L	0.30	0.029	1		10/29/19 10:04	16984-48-8		
Sulfate	239	mg/L	20.0	0.34	20		10/29/19 22:37	14808-79-8		

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ANALYTICAL RESULTS

Project: Plant McDonough AP-1
Pace Project No.: 2624571

Sample: DGWC-39		Lab ID: 2624571005		Collected: 10/18/19 10:40		Received: 10/18/19 15:40		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Arsenic	0.00075J	mg/L	0.0050	0.00035	1	10/23/19 16:22	10/24/19 22:28	7440-38-2	B	
Barium	0.10	mg/L	0.010	0.00049	1	10/23/19 16:22	10/24/19 22:28	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	10/23/19 16:22	10/24/19 22:28	7440-41-7		
Boron	3.6	mg/L	0.040	0.0049	1	10/23/19 16:22	10/24/19 22:28	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	10/23/19 16:22	10/24/19 22:28	7440-43-9		
Calcium	95.0	mg/L	5.0	0.55	50	10/23/19 16:22	10/24/19 22:33	7440-70-2		
Chromium	ND	mg/L	0.010	0.00039	1	10/23/19 16:22	10/24/19 22:28	7440-47-3		
Cobalt	0.0070	mg/L	0.0050	0.00030	1	10/23/19 16:22	10/24/19 22:28	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	10/23/19 16:22	10/24/19 22:28	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	10/23/19 16:22	10/24/19 22:28	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	10/23/19 16:22	10/24/19 22:28	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	10/23/19 16:22	10/24/19 22:28	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	10/23/19 16:22	10/24/19 22:28	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	10/24/19 17:51	10/25/19 17:26	7439-97-6		
2540C Total Dissolved Solids		Analytical Method: SM 2540C								
Total Dissolved Solids	489	mg/L	10.0	10.0	1		10/25/19 14:39			
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Chloride	8.0	mg/L	1.0	0.024	1		10/29/19 10:26	16887-00-6		
Fluoride	0.14J	mg/L	0.30	0.029	1		10/29/19 10:26	16984-48-8		
Sulfate	182	mg/L	20.0	0.34	20		10/29/19 22:59	14808-79-8		

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ANALYTICAL RESULTS

Project: Plant McDonough AP-1
Pace Project No.: 2624571

Sample: DGWC-40		Lab ID: 2624571006		Collected: 10/18/19 12:45		Received: 10/18/19 15:40		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Arsenic	ND	mg/L	0.0050	0.00035	1	10/23/19 16:22	10/24/19 22:39	7440-38-2		
Barium	0.019	mg/L	0.010	0.00049	1	10/23/19 16:22	10/24/19 22:39	7440-39-3		
Beryllium	0.0033	mg/L	0.0030	0.000074	1	10/23/19 16:22	10/24/19 22:39	7440-41-7		
Boron	0.90	mg/L	0.040	0.0049	1	10/23/19 16:22	10/24/19 22:39	7440-42-8		
Cadmium	0.00088J	mg/L	0.0025	0.00011	1	10/23/19 16:22	10/24/19 22:39	7440-43-9		
Calcium	43.7	mg/L	5.0	0.55	50	10/23/19 16:22	10/24/19 22:45	7440-70-2		
Chromium	0.00078J	mg/L	0.010	0.00039	1	10/23/19 16:22	10/24/19 22:39	7440-47-3		
Cobalt	0.043	mg/L	0.0050	0.00030	1	10/23/19 16:22	10/24/19 22:39	7440-48-4		
Lead	0.00015J	mg/L	0.0050	0.000046	1	10/23/19 16:22	10/24/19 22:39	7439-92-1		
Lithium	0.0024J	mg/L	0.030	0.00078	1	10/23/19 16:22	10/24/19 22:39	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	10/23/19 16:22	10/24/19 22:39	7439-98-7		
Selenium	0.0027J	mg/L	0.010	0.0013	1	10/23/19 16:22	10/24/19 22:39	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	10/23/19 16:22	10/24/19 22:39	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	10/24/19 17:51	10/25/19 17:29	7439-97-6		
2540C Total Dissolved Solids		Analytical Method: SM 2540C								
Total Dissolved Solids	360	mg/L	10.0	10.0	1		10/25/19 14:39			
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Chloride	19.2	mg/L	1.0	0.024	1		10/29/19 10:48	16887-00-6		
Fluoride	0.13J	mg/L	0.30	0.029	1		10/29/19 10:48	16984-48-8		
Sulfate	205	mg/L	20.0	0.34	20		10/29/19 23:21	14808-79-8		

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ANALYTICAL RESULTS

Project: Plant McDonough AP-1
Pace Project No.: 2624571

Sample: EB-3		Lab ID: 2624571007		Collected: 10/18/19 13:25		Received: 10/18/19 15:40		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Arsenic	ND	mg/L	0.0050	0.00035	1	10/23/19 16:22	10/24/19 22:50	7440-38-2		
Barium	ND	mg/L	0.010	0.00049	1	10/23/19 16:22	10/24/19 22:50	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	10/23/19 16:22	10/24/19 22:50	7440-41-7		
Boron	ND	mg/L	0.040	0.0049	1	10/23/19 16:22	10/24/19 22:50	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	10/23/19 16:22	10/24/19 22:50	7440-43-9		
Calcium	0.038J	mg/L	0.10	0.011	1	10/23/19 16:22	10/24/19 22:50	7440-70-2		
Chromium	0.00048J	mg/L	0.010	0.00039	1	10/23/19 16:22	10/24/19 22:50	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	10/23/19 16:22	10/24/19 22:50	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	10/23/19 16:22	10/24/19 22:50	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	10/23/19 16:22	10/24/19 22:50	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	10/23/19 16:22	10/24/19 22:50	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	10/23/19 16:22	10/24/19 22:50	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	10/23/19 16:22	10/24/19 22:50	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	10/24/19 17:51	10/25/19 17:31	7439-97-6		
2540C Total Dissolved Solids		Analytical Method: SM 2540C								
Total Dissolved Solids	ND	mg/L	10.0	10.0	1		10/25/19 14:39			
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Chloride	0.028J	mg/L	1.0	0.024	1		10/29/19 11:11	16887-00-6		
Fluoride	ND	mg/L	0.30	0.029	1		10/29/19 11:11	16984-48-8		
Sulfate	ND	mg/L	1.0	0.017	1		10/29/19 11:11	14808-79-8		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant McDonough AP-1
Pace Project No.: 2624571

QC Batch: 37509 Analysis Method: EPA 7470A
QC Batch Method: EPA 7470A Analysis Description: 7470 Mercury
Associated Lab Samples: 2624571001, 2624571002, 2624571003, 2624571004, 2624571005, 2624571006, 2624571007

METHOD BLANK: 170040 Matrix: Water
Associated Lab Samples: 2624571001, 2624571002, 2624571003, 2624571004, 2624571005, 2624571006, 2624571007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	10/25/19 16:27	

LABORATORY CONTROL SAMPLE: 170041

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0026	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 170042 170043

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		2624567002 Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Mercury	mg/L	0.00042J	0.0025	0.0025	0.0030	0.0030	104	101	75-125	2	20		

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QUALITY CONTROL DATA

Project: Plant McDonough AP-1

Pace Project No.: 2624571

QC Batch: 37435 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2624571001, 2624571002, 2624571003, 2624571004, 2624571005, 2624571006, 2624571007

METHOD BLANK: 169374 Matrix: Water
Associated Lab Samples: 2624571001, 2624571002, 2624571003, 2624571004, 2624571005, 2624571006, 2624571007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/L	0.00059J	0.0050	0.00035	10/24/19 17:54	
Barium	mg/L	ND	0.010	0.00049	10/24/19 17:54	
Beryllium	mg/L	ND	0.0030	0.000074	10/24/19 17:54	
Boron	mg/L	ND	0.040	0.0049	10/24/19 17:54	
Cadmium	mg/L	ND	0.0025	0.00011	10/24/19 17:54	
Calcium	mg/L	ND	0.10	0.011	10/24/19 17:54	
Chromium	mg/L	ND	0.010	0.00039	10/24/19 17:54	
Cobalt	mg/L	ND	0.0050	0.00030	10/24/19 17:54	
Lead	mg/L	ND	0.0050	0.000046	10/24/19 17:54	
Lithium	mg/L	ND	0.030	0.00078	10/24/19 17:54	
Molybdenum	mg/L	ND	0.010	0.00095	10/24/19 17:54	
Selenium	mg/L	ND	0.010	0.0013	10/24/19 17:54	
Thallium	mg/L	ND	0.0010	0.000052	10/24/19 17:54	

LABORATORY CONTROL SAMPLE: 169375

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.1	0.093	93	80-120	
Barium	mg/L	0.1	0.098	98	80-120	
Beryllium	mg/L	0.1	0.10	100	80-120	
Boron	mg/L	1	1.0	103	80-120	
Cadmium	mg/L	0.1	0.099	99	80-120	
Calcium	mg/L	1	0.98	98	80-120	
Chromium	mg/L	0.1	0.096	96	80-120	
Cobalt	mg/L	0.1	0.097	97	80-120	
Lead	mg/L	0.1	0.095	95	80-120	
Lithium	mg/L	0.1	0.10	101	80-120	
Molybdenum	mg/L	0.1	0.099	99	80-120	
Selenium	mg/L	0.1	0.099	99	80-120	
Thallium	mg/L	0.1	0.096	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 169376 169377

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		2624567001 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
Arsenic	mg/L	ND	0.1	0.1	0.098	0.096	98	96	75-125	2	20	
Barium	mg/L	0.022	0.1	0.1	0.12	0.12	102	101	75-125	0	20	
Beryllium	mg/L	ND	0.1	0.1	0.097	0.095	96	95	75-125	1	20	

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QUALITY CONTROL DATA

Project: Plant McDonough AP-1
Pace Project No.: 2624571

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 169376		169377		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2624567001 Result	MS Spike Conc.	MSD Spike Conc.									
Boron	mg/L	0.73	1	1	1.8	1.8	102	105	75-125	1	20		
Cadmium	mg/L	0.00013J	0.1	0.1	0.098	0.096	98	96	75-125	2	20		
Calcium	mg/L	47.2	1	1	48.1	46.8	90	-44	75-125	3	20	M6	
Chromium	mg/L	0.00046J	0.1	0.1	0.10	0.098	101	98	75-125	3	20		
Cobalt	mg/L	0.0084	0.1	0.1	0.11	0.11	101	99	75-125	2	20		
Lead	mg/L	0.000086J	0.1	0.1	0.094	0.092	94	91	75-125	2	20		
Lithium	mg/L	0.029J	0.1	0.1	0.13	0.12	99	96	75-125	2	20		
Molybdenum	mg/L	0.0018J	0.1	0.1	0.10	0.10	99	100	75-125	2	20		
Selenium	mg/L	0.0051J	0.1	0.1	0.10	0.10	97	95	75-125	1	20		
Thallium	mg/L	ND	0.1	0.1	0.094	0.092	94	92	75-125	2	20		

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QUALITY CONTROL DATA

Project: Plant McDonough AP-1
Pace Project No.: 2624571

QC Batch: 37487 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 2624571001, 2624571002, 2624571003, 2624571004, 2624571005, 2624571006, 2624571007

LABORATORY CONTROL SAMPLE: 169757

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	392	98	84-108	

SAMPLE DUPLICATE: 169758

Parameter	Units	2624567001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	302	288	5	10	H1

SAMPLE DUPLICATE: 170356

Parameter	Units	2624567012 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	593	591	0	10	

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QUALITY CONTROL DATA

Project: Plant McDonough AP-1

Pace Project No.: 2624571

QC Batch: 37578

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 2624571001, 2624571002, 2624571003, 2624571004, 2624571005, 2624571006, 2624571007

METHOD BLANK: 170487

Matrix: Water

Associated Lab Samples: 2624571001, 2624571002, 2624571003, 2624571004, 2624571005, 2624571006, 2624571007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.024	10/29/19 00:30	
Fluoride	mg/L	ND	0.30	0.029	10/29/19 00:30	
Sulfate	mg/L	ND	1.0	0.017	10/29/19 00:30	

LABORATORY CONTROL SAMPLE: 170488

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	10	10.1	101	90-110	
Fluoride	mg/L	10	10.3	103	90-110	
Sulfate	mg/L	10	9.6	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 170489 170490

Parameter	Units	2624567001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2.8	10	10	12.8	12.8	100	100	90-110	0	15	
Fluoride	mg/L	0.042J	10	10	10.0	10.0	100	100	90-110	0	15	

MATRIX SPIKE SAMPLE: 170491

Parameter	Units	2624567002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L		10	10	16.9	69	90-110 M1
Fluoride	mg/L		1.2	10	ND	-12	90-110 M1
Sulfate	mg/L		331	10	ND	-3310	90-110 M1

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Plant McDonough AP-1

Pace Project No.: 2624571

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

H1 Analysis conducted outside the EPA method holding time.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant McDonough AP-1
Pace Project No.: 2624571

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624571001	DGWC-67	EPA 3005A	37435	EPA 6020B	37459
2624571002	EB-2	EPA 3005A	37435	EPA 6020B	37459
2624571003	DGWC-37	EPA 3005A	37435	EPA 6020B	37459
2624571004	DGWC-38	EPA 3005A	37435	EPA 6020B	37459
2624571005	DGWC-39	EPA 3005A	37435	EPA 6020B	37459
2624571006	DGWC-40	EPA 3005A	37435	EPA 6020B	37459
2624571007	EB-3	EPA 3005A	37435	EPA 6020B	37459
2624571001	DGWC-67	EPA 7470A	37509	EPA 7470A	37584
2624571002	EB-2	EPA 7470A	37509	EPA 7470A	37584
2624571003	DGWC-37	EPA 7470A	37509	EPA 7470A	37584
2624571004	DGWC-38	EPA 7470A	37509	EPA 7470A	37584
2624571005	DGWC-39	EPA 7470A	37509	EPA 7470A	37584
2624571006	DGWC-40	EPA 7470A	37509	EPA 7470A	37584
2624571007	EB-3	EPA 7470A	37509	EPA 7470A	37584
2624571001	DGWC-67	SM 2540C	37487		
2624571002	EB-2	SM 2540C	37487		
2624571003	DGWC-37	SM 2540C	37487		
2624571004	DGWC-38	SM 2540C	37487		
2624571005	DGWC-39	SM 2540C	37487		
2624571006	DGWC-40	SM 2540C	37487		
2624571007	EB-3	SM 2540C	37487		
2624571001	DGWC-67	EPA 300.0	37578		
2624571002	EB-2	EPA 300.0	37578		
2624571003	DGWC-37	EPA 300.0	37578		
2624571004	DGWC-38	EPA 300.0	37578		
2624571005	DGWC-39	EPA 300.0	37578		
2624571006	DGWC-40	EPA 300.0	37578		
2624571007	EB-3	EPA 300.0	37578		

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Sample Condition Upon Receipt



Client Name: GIA Powere Project # _____

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Optional Proj. Due Date:
Proj. Name:

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used 83 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temperature 0.2 Biological Tissue is Frozen: Yes No

Date and initials of person examining contents: <u>10/18/19 MK</u>
--

Temp should be above freezing to 6°C

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
		Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____

Date: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

February 03, 2020

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

RE: Project: PLANT MCDONOUGH RADS
Pace Project No.: 2627493

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on January 06, 2020. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kevin Herring
kevin.herring@pacelabs.com
(704)875-9092
HORIZON Database Administrator

Enclosures

cc: Daniela Herrera, Golder
Ben Hodges, Georgia Power
Jimmy Jones, Golder Associates Inc.
Kristen Jurinko
Julie Lehrman, Golder Associates Inc.
Lauren Petty, Southern Company Services, Inc.
Dawn Prell, Golder Associates Inc.
Tim Richards, Golder Associates - Atlanta



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PLANT MCDONOUGH RADS
Pace Project No.: 2627493

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991

Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: PLANT MCDONOUGH RADS

Pace Project No.: 2627493

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2627493001	DGWC-37	Water	01/06/20 11:40	01/06/20 16:00
2627493002	DGWC-38	Water	01/06/20 11:56	01/06/20 16:00
2627493003	DGWC-39	Water	01/06/20 14:18	01/06/20 16:00
2627493004	DGWC-40	Water	01/06/20 13:55	01/06/20 16:00
2627493005	DGWC-67	Water	01/06/20 12:35	01/06/20 16:00
2627493006	FD-1	Water	01/06/20 00:00	01/06/20 16:00
2627493007	FB-1	Water	01/06/20 12:15	01/06/20 16:00
2627493008	EB-1	Water	01/06/20 15:00	01/06/20 16:00

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SAMPLE ANALYTE COUNT

Project: PLANT MCDONOUGH RADS
Pace Project No.: 2627493

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2627493001	DGWC-37	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
2627493002	DGWC-38	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
2627493003	DGWC-39	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
2627493004	DGWC-40	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
2627493005	DGWC-67	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
2627493006	FD-1	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
2627493007	FB-1	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
2627493008	EB-1	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH RADS

Pace Project No.: 2627493

Sample: DGWC-37 **Lab ID: 2627493001** Collected: 01/06/20 11:40 Received: 01/06/20 16:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	1.05 ± 0.438 (0.453) C:84% T:NA	pCi/L	01/17/20 08:21	13982-63-3	
Radium-228	EPA 9320	0.956 ± 0.407 (0.640) C:74% T:84%	pCi/L	01/23/20 15:20	15262-20-1	
Total Radium	Total Radium Calculation	2.01 ± 0.845 (1.09)	pCi/L	01/27/20 09:11	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH RADS

Pace Project No.: 2627493

Sample: DGWC-38 **Lab ID: 2627493002** Collected: 01/06/20 11:56 Received: 01/06/20 16:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.151 ± 0.218 (0.467) C:89% T:NA	pCi/L	01/17/20 08:22	13982-63-3	
Radium-228	EPA 9320	0.376 ± 0.282 (0.541) C:76% T:87%	pCi/L	01/23/20 15:20	15262-20-1	
Total Radium	Total Radium Calculation	0.527 ± 0.500 (1.01)	pCi/L	01/27/20 09:11	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH RADS

Pace Project No.: 2627493

Sample: DGWC-39 **Lab ID: 2627493003** Collected: 01/06/20 14:18 Received: 01/06/20 16:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.527 ± 0.299 (0.419) C:96% T:NA	pCi/L	01/17/20 08:22	13982-63-3	
Radium-228	EPA 9320	0.876 ± 0.415 (0.691) C:74% T:80%	pCi/L	01/23/20 15:20	15262-20-1	
Total Radium	Total Radium Calculation	1.40 ± 0.714 (1.11)	pCi/L	01/27/20 09:11	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH RADS

Pace Project No.: 2627493

Sample: DGWC-40 **Lab ID: 2627493004** Collected: 01/06/20 13:55 Received: 01/06/20 16:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.520 ± 0.342 (0.576) C:93% T:NA	pCi/L	01/17/20 08:22	13982-63-3	
Radium-228	EPA 9320	1.08 ± 0.487 (0.804) C:72% T:75%	pCi/L	01/23/20 15:20	15262-20-1	
Total Radium	Total Radium Calculation	1.60 ± 0.829 (1.38)	pCi/L	01/27/20 09:11	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH RADS

Pace Project No.: 2627493

Sample: DGWC-67 **Lab ID: 2627493005** Collected: 01/06/20 12:35 Received: 01/06/20 16:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.313 ± 0.291 (0.548) C:82% T:NA	pCi/L	01/17/20 08:23	13982-63-3	
Radium-228	EPA 9320	0.652 ± 0.348 (0.610) C:76% T:88%	pCi/L	01/23/20 15:21	15262-20-1	
Total Radium	Total Radium Calculation	0.965 ± 0.639 (1.16)	pCi/L	01/27/20 09:11	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH RADS

Pace Project No.: 2627493

Sample: FD-1 **Lab ID: 2627493006** Collected: 01/06/20 00:00 Received: 01/06/20 16:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.507 ± 0.317 (0.469) C:83% T:NA	pCi/L	01/17/20 08:23	13982-63-3	
Radium-228	EPA 9320	0.711 ± 0.347 (0.574) C:74% T:86%	pCi/L	01/23/20 15:21	15262-20-1	
Total Radium	Total Radium Calculation	1.22 ± 0.664 (1.04)	pCi/L	01/27/20 09:11	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH RADS

Pace Project No.: 2627493

Sample: FB-1 **Lab ID: 2627493007** Collected: 01/06/20 12:15 Received: 01/06/20 16:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.310 ± 0.285 (0.534) C:84% T:NA	pCi/L	01/17/20 08:23	13982-63-3	
Radium-228	EPA 9320	0.260 ± 0.301 (0.630) C:77% T:84%	pCi/L	01/23/20 15:21	15262-20-1	
Total Radium	Total Radium Calculation	0.570 ± 0.586 (1.16)	pCi/L	01/27/20 09:11	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCDONOUGH RADS

Pace Project No.: 2627493

Sample: EB-1 **Lab ID: 2627493008** Collected: 01/06/20 15:00 Received: 01/06/20 16:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.196 ± 0.257 (0.540) C:80% T:NA	pCi/L	01/17/20 08:23	13982-63-3	
Radium-228	EPA 9320	0.690 ± 0.427 (0.794) C:73% T:74%	pCi/L	01/23/20 15:21	15262-20-1	
Total Radium	Total Radium Calculation	0.886 ± 0.684 (1.33)	pCi/L	01/27/20 09:11	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT MCDONOUGH RADS

Pace Project No.: 2627493

QC Batch:	379570	Analysis Method:	EPA 9320
QC Batch Method:	EPA 9320	Analysis Description:	9320 Radium 228
Associated Lab Samples:	2627493001, 2627493002, 2627493003, 2627493004, 2627493005, 2627493006, 2627493007, 2627493008		

METHOD BLANK:	1840224	Matrix:	Water
Associated Lab Samples:	2627493001, 2627493002, 2627493003, 2627493004, 2627493005, 2627493006, 2627493007, 2627493008		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.235 ± 0.354 (0.764) C:74% T:88%	pCi/L	01/23/20 15:17	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT MCDONOUGH RADS

Pace Project No.: 2627493

QC Batch:	379543	Analysis Method:	EPA 9315
QC Batch Method:	EPA 9315	Analysis Description:	9315 Total Radium
Associated Lab Samples:	2627493001, 2627493002, 2627493003, 2627493004, 2627493005, 2627493006, 2627493007, 2627493008		

METHOD BLANK:	1840151	Matrix:	Water
Associated Lab Samples:	2627493001, 2627493002, 2627493003, 2627493004, 2627493005, 2627493006, 2627493007, 2627493008		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.178 ± 0.213 (0.422) C:89% T:NA	pCi/L	01/17/20 08:21	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALIFIERS

Project: PLANT MCDONOUGH RADS

Pace Project No.: 2627493

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PLANT MCDONOUGH RADS
Pace Project No.: 2627493

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2627493001	DGWC-37	EPA 9315	379543		
2627493002	DGWC-38	EPA 9315	379543		
2627493003	DGWC-39	EPA 9315	379543		
2627493004	DGWC-40	EPA 9315	379543		
2627493005	DGWC-67	EPA 9315	379543		
2627493006	FD-1	EPA 9315	379543		
2627493007	FB-1	EPA 9315	379543		
2627493008	EB-1	EPA 9315	379543		
2627493001	DGWC-37	EPA 9320	379570		
2627493002	DGWC-38	EPA 9320	379570		
2627493003	DGWC-39	EPA 9320	379570		
2627493004	DGWC-40	EPA 9320	379570		
2627493005	DGWC-67	EPA 9320	379570		
2627493006	FD-1	EPA 9320	379570		
2627493007	FB-1	EPA 9320	379570		
2627493008	EB-1	EPA 9320	379570		
2627493001	DGWC-37	Total Radium Calculation	381188		
2627493002	DGWC-38	Total Radium Calculation	381188		
2627493003	DGWC-39	Total Radium Calculation	381188		
2627493004	DGWC-40	Total Radium Calculation	381188		
2627493005	DGWC-67	Total Radium Calculation	381188		
2627493006	FD-1	Total Radium Calculation	381188		
2627493007	FB-1	Total Radium Calculation	381188		
2627493008	EB-1	Total Radium Calculation	381188		

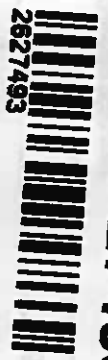
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CHAIN-OF-CUSTODY / Analytical Request Doc
The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be

MO# : 2627493



2627493

Section A Required Client Information: **Section B** Required Project Information: **Section C** Invoice Information:

Company: Golden Associates, Inc. Report To: James Jones + John Abraham Attention:
 Address: 5170 Peachtree Road Copy To: Company Name:
 Building: 100 Sula 300 Atlanta GA 30341 Purchase Order #: Address:
 Email: James.jones@golden.com Project Name: Plant McDonough Rads Pace Project Manager: Kevin.Herring@pacelabs.com
 Phone: (615)566-1402 Fax: Project #: 166849618 Pace Profile #:
 Requested Due Date: RAT Requested Analysis Method (Y/N): State / Location: GA

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9 / . -) Sample IDs must be unique	MATRIX Drinking Water Water Wastewater Product Soil/Sediment Oil Wipe Air Other Tissue	CODE DW WT WW P SL CL WP AQ OT TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives							Analyses Test	Y/N	Radium	Residual Chlorine (Y/N)	TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Sample Intact (Y/N)														
						START DATE	END DATE			Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol									Other													
1	D6WC-37					1-20-14	11:40																															
2	D6WC-38						11:56																															
3	D6WC-39						1:48																															
4	D6WC-40						1:55																															
5	D6WC-67						1:35																															
6	FD-1						-																															
7	FB-1						1:15																															
8	FB-1						1:50																															
9																																						
10																																						
11																																						
12																																						

ADDITIONAL COMMENTS: SPW.../SAMPLE

RELINQUISHED BY / AFFILIATION: SPW.../SAMPLE DATE: 01/06/2016 TIME: 16:00

ACCEPTED BY / AFFILIATION: K. Mullinger/Pace DATE: 1/6/20 TIME: 1600

SAMPLER NAME AND SIGNATURE: Karin M. Nika + Jude WAGUESPAK

PRINT Name of SAMPLER: Karin M. Nika + Jude WAGUESPAK

SIGNATURE OF SAMPLER: [Signature] DATE Signed: 01.06.2016



Sample Condition Upon Receipt

WO#: 2627493

Client Name: Golder Assoc.

PM: KH Due Date: 02/04/20
CLIENT: 26-GA Power

Courier: Fed Ex UPS USPS Client Commercial Pace Other
Tracking #: _____

Custody Seal on Cooler/Box Present: yes No Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other plastic bags

Thermometer Used JHR214 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temperature 7.3/8.7 Biological Tissue is Frozen: Yes No
Temp should be above freezing to 6°C

Date and Initials of person examining contents: KW 1/6/20

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12. NO MATRIX PROVIDED ON COC.
-Includes date/time/ID/Analysis Matrix: <u>WT</u>		
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed <u>KW 1/6/20</u> Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: _____ Field Data Required? Y / N
Person Contacted: _____ Date/Time: _____
Comments/ Resolution: _____

3000 W28

Project Manager Review: _____ Date: _____

Product Name: Low-Flow System

Date: 2019-08-28 09:58:14

Project Information:

Operator Name C. Tidwell
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 597519
Turbidity Make/Model LaMotte 2020WE

Pump Information:

Pump Model/Type Alexis
Tubing Type polyethylene
Tubing Diameter .17 in
Tubing Length 38 ft

Pump placement from TOC 38 ft

Well Information:

Well ID DGWC-37
Well diameter 2 in
Well Total Depth 43.10 ft
Screen Length 10 ft
Depth to Water 13.79 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.2596101 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 2.5 in
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	09:35:35	900.02	20.17	6.26	400.84	12.58	14.01	1.77	120.91
Last 5	09:40:35	1200.02	20.50	6.28	397.76	6.58	14.00	2.03	123.16
Last 5	09:45:35	1500.02	20.40	6.26	401.45	4.88	14.00	1.82	125.02
Last 5	09:50:35	1800.02	20.48	6.26	401.39	7.74	14.01	1.73	128.65
Last 5	09:55:35	2100.02	20.51	6.27	399.06	4.46	14.00	1.71	131.73
Variance 0			-0.11	-0.02	3.69			-0.21	1.86
Variance 1			0.09	0.00	-0.06			-0.10	3.63
Variance 2			0.02	0.01	-2.33			-0.02	3.07

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-28 11:27:47

Project Information:

Operator Name C. Tidwell
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 597519
Turbidity Make/Model LaMotte 2020WE

Pump Information:

Pump Model/Type Alexis
Tubing Type polyethylene
Tubing Diameter .17 in
Tubing Length 23 ft

Pump placement from TOC 23 ft

Well Information:

Well ID DGWC-38
Well diameter 2 in
Well Total Depth 28 ft
Screen Length 10 ft
Depth to Water 6.62 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.1926587 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 4.08 in
Total Volume Pumped 9 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	11:13:10	300.09	22.09	5.98	684.06	4.31	6.96	0.13	102.73
Last 5	11:18:10	600.02	22.38	5.98	683.79	2.52	6.96	0.12	106.78
Last 5	11:23:10	900.02	22.28	5.98	682.95	1.05	6.96	0.12	110.47
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			0.29	0.00	-0.27			-0.01	4.05
Variance 2			-0.10	0.00	-0.84			-0.00	3.69

Notes

I-pad overheated. First 30 minutes of readings lost.

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-28 13:42:49

Project Information:

Operator Name C. Tidwell
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 597519
Turbidity Make/Model LaMotte 2020WE

Pump Information:

Pump Model/Type Alexis
Tubing Type polyethylene
Tubing Diameter .17 in
Tubing Length 19 ft

Pump placement from TOC 19 ft

Well Information:

Well ID DGWC-39
Well diameter 2 in
Well Total Depth 24.65 ft
Screen Length 10 ft
Depth to Water 8.95 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.1748051 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 10.8 in
Total Volume Pumped 6.0 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	13:19:23	600.02	22.62	6.34	804.34	4.48	9.85	0.16	30.92
Last 5	13:24:23	900.02	22.81	6.38	799.53	2.33	9.83	0.14	25.61
Last 5	13:29:23	1200.02	22.38	6.39	799.76	2.30	9.85	0.13	23.56
Last 5	13:34:23	1500.02	22.18	6.40	805.01	2.17	9.85	0.12	20.54
Last 5	13:39:23	1800.02	22.36	6.41	800.94	2.05	9.85	0.11	18.94
Variance 0			-0.43	0.01	0.22			-0.01	-2.05
Variance 1			-0.20	0.01	5.25			-0.00	-3.03
Variance 2			0.18	0.01	-4.07			-0.01	-1.59

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-28 15:17:09

Project Information:

Operator Name C. Tidwell
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 597519
Turbidity Make/Model LaMotte 2020WE

Pump Information:

Pump Model/Type Alexis
Tubing Type polyethylene
Tubing Diameter .17 in
Tubing Length 33 ft

Pump placement from TOC 33 ft

Well Information:

Well ID DGWC-40
Well diameter 2 in
Well Total Depth 38.45 ft
Screen Length 10 ft
Depth to Water 20.15 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.237293 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 0.72 in
Total Volume Pumped 6 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	14:53:29	600.02	23.34	4.89	545.88	2.04	20.21	2.26	178.78
Last 5	14:58:29	900.02	23.39	4.74	539.83	1.60	20.21	2.36	203.13
Last 5	15:03:29	1200.02	23.83	4.70	541.55	1.02	20.21	2.35	223.02
Last 5	15:08:29	1500.02	23.79	4.69	539.02	1.33	20.21	2.34	239.28
Last 5	15:13:29	1800.02	23.55	4.68	537.92	0.91	20.21	2.37	252.08
Variance 0			0.44	-0.04	1.71			-0.01	19.89
Variance 1			-0.04	-0.01	-2.53			-0.01	16.26
Variance 2			-0.25	-0.01	-1.09			0.03	12.81

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-28 15:02:50

Project Information:

Operator Name K. Minkara
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 643819
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Alexis
Tubing Type polyethylene
Tubing Diameter 0.170 in
Tubing Length 50 ft

Pump placement from TOC 50 ft

Well Information:

Well ID DGWC-67
Well diameter 2 in
Well Total Depth 55.50 ft
Screen Length 10 ft
Depth to Water 9.99 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.3131711 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 5.76 in
Total Volume Pumped 3 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	14:49:22	300.03	22.47	6.26	405.15	2.13	10.43	0.31	70.38
Last 5	14:54:22	600.02	21.39	6.23	408.07	1.93	10.47	0.21	71.36
Last 5	14:59:22	900.01	21.42	6.22	410.11	3.58	10.47	0.18	71.67
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			-1.08	-0.03	2.92			-0.10	0.98
Variance 2			0.03	-0.01	2.04			-0.03	0.31

Notes

Sampled DGWC-67 at 1500

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-28 13:49:16

Project Information:

Operator Name K. Minkara
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 643819
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Alexis
Tubing Type polyethylene
Tubing Diameter 0.170 in
Tubing Length 25 ft

Pump placement from TOC 25 ft

Well Information:

Well ID DGWC-68A
Well diameter 2 in
Well Total Depth 29.79 ft
Screen Length 10 ft
Depth to Water 10.11 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.2015856 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 3.36 in
Total Volume Pumped 3 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	13:36:45	300.03	22.17	6.60	412.29	0.40	10.36	0.28	67.34
Last 5	13:41:45	600.01	20.18	6.60	425.41	0.46	10.38	0.19	67.76
Last 5	13:46:45	900.01	20.39	6.60	425.53	0.97	10.39	0.13	67.60
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			-1.99	0.00	13.12			-0.09	0.42
Variance 2			0.21	0.00	0.13			-0.06	-0.16

Notes

Sampled DGWC-68A at 1345

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-28 12:04:19

Project Information:

Operator Name K. Minkara
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 643819
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Alexis
Tubing Type polyethylene
Tubing Diameter 0.170 in
Tubing Length 17 ft

Pump placement from TOC 17 ft

Well Information:

Well ID DGWC-69
Well diameter 2 in
Well Total Depth 24.03 ft
Screen Length 10 ft
Depth to Water 5.86 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.1658782 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 14.88 in
Total Volume Pumped 4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	11:47:18	300.03	23.14	6.16	107.01	1.17	6.70	2.99	53.89
Last 5	11:52:18	600.02	22.65	6.12	108.17	0.60	6.96	2.97	53.26
Last 5	11:57:18	900.01	21.81	6.10	108.71	0.48	7.06	2.98	54.57
Last 5	12:02:18	1200.00	21.42	6.09	108.85	0.40	7.10	2.97	55.79
Last 5									
Variance 0			-0.49	-0.04	1.16			-0.01	-0.63
Variance 1			-0.84	-0.02	0.54			0.01	1.31
Variance 2			-0.39	-0.01	0.14			-0.01	1.23

Notes

Sampled DGWC-69 at 1200. FD-2 here

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-27 15:12:10

Project Information:

Operator Name D. Herrera
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 463068
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type SamplePro
Tubing Type polyethylene
Tubing Diameter 0.170 in
Tubing Length 43.05 ft

Pump placement from TOC 43.05 ft

Well Information:

Well ID DGWA-71
Well diameter 2 in
Well Total Depth 47.79 ft
Screen Length 10 ft
Depth to Water 28.55 ft

Pumping Information:

Final Pumping Rate 250 mL/min
Total System Volume 0.4381711 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 5.4 in
Total Volume Pumped 6.25 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	14:49:32	300.03	22.12	5.82	73.52	5.48	29.00	2.30	99.06
Last 5	14:54:32	600.02	20.98	5.86	74.00	3.18	29.00	3.27	88.08
Last 5	14:59:32	900.02	20.97	5.88	74.19	3.62	29.00	3.47	81.08
Last 5	15:04:32	1200.02	21.17	5.87	73.95	2.98	29.00	3.52	81.70
Last 5	15:09:32	1500.02	21.27	5.87	73.53	3.33	29.00	3.56	78.32
Variance 0			-0.01	0.01	0.19			0.20	-7.00
Variance 1			0.20	-0.00	-0.23			0.05	0.62
Variance 2			0.11	-0.00	-0.42			0.04	-3.38

Notes

Sampled DGWA-71
Sampled DGWA-71

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-27 10:01:56

Project Information:

Operator Name K. Minkara
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 643819
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Alexis
Tubing Type polyethylene
Tubing Diameter 0.170 in
Tubing Length 33 ft

Pump placement from TOC 33 ft

Well Information:

Well ID DGWA-53
Well diameter 2 in
Well Total Depth 36.89 ft
Screen Length 10 ft
Depth to Water 15.63 ft

Pumping Information:

Final Pumping Rate 120 mL/min
Total System Volume 0.237293 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 137.64 in
Total Volume Pumped 13.2 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	09:38:45	1200.00	19.32	5.99	163.51	17.10	24.67	0.36	73.84
Last 5	09:43:45	1499.99	19.71	5.97	165.81	11.10	25.80	0.42	72.33
Last 5	09:48:45	1799.99	20.32	5.98	166.85	6.71	26.25	0.45	69.93
Last 5	09:53:45	2099.98	20.62	5.98	171.34	5.55	26.88	0.47	66.93
Last 5	09:58:45	2399.98	21.08	5.99	172.58	5.07	27.10	0.49	63.67
Variance 0			0.61	0.01	1.04			0.03	-2.40
Variance 1			0.30	-0.00	4.49			0.02	-2.99
Variance 2			0.46	0.01	1.24			0.01	-3.27

Notes

Purged dry with final DTW at 27.10. Returning to sample 8/28

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-28 11:06:07

Project Information:

Operator Name K. Minkara
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 643819
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Alexis
Tubing Type polyethylene
Tubing Diameter 0.170 in
Tubing Length 33 ft

Pump placement from TOC 33 ft

Well Information:

Well ID DGWA-53
Well diameter 2 in
Well Total Depth 36.89 ft
Screen Length 10 ft
Depth to Water 15.59 ft

Pumping Information:

Final Pumping Rate 480 mL/min
Total System Volume 0.237293 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 141.24 in
Total Volume Pumped 15 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	10:42:13	2099.98	20.35	6.17	188.61	5.89	21.31	0.12	41.31
Last 5	10:47:13	2399.98	19.86	6.17	172.49	5.14	23.50	0.20	43.20
Last 5	10:52:13	2699.97	20.26	6.15	170.78	4.01	25.45	0.26	44.73
Last 5	10:57:13	2999.97	20.48	6.13	170.58	3.80	26.80	0.33	45.67
Last 5	11:02:13	3299.96	21.24	6.11	170.74	3.88	27.36	0.41	45.80
Variance 0			0.40	-0.02	-1.71			0.06	1.52
Variance 1			0.23	-0.02	-0.20			0.07	0.94
Variance 2			0.75	-0.02	0.16			0.08	0.13

Notes

Missed 24hr sample deadline. Purged dry again, will sample 8/29

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-28 15:58:36

Project Information:

Operator Name K. Minkara
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 643819
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Alexis
Tubing Type polyethylene
Tubing Diameter 0.170 in
Tubing Length 33 ft

Pump placement from TOC 33 ft

Well Information:

Well ID DGWA-53
Well diameter 2 in
Well Total Depth 36.89 ft
Screen Length 10 ft
Depth to Water 15.80 ft

Pumping Information:

Final Pumping Rate 120 mL/min
Total System Volume 0.237293 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 10.2 in
Total Volume Pumped 30 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	15:56:26	300.04	26.84	6.04	208.53	2.99	16.65	0.88	51.78
Last 5									
Last 5									
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			0.00	0.00	0.00			0.00	0.00
Variance 2			0.00	0.00	0.00			0.00	0.00

Notes

Sampled DGWA-53 at 1555. Previously purged dry twice

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-27 10:16:14

Project Information:

Operator Name D. Herrera
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 463068
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type SamplePro
Tubing Type polyethylene
Tubing Diameter 0.170 in
Tubing Length 56.00 ft

Pump placement from TOC 56.00 ft

Well Information:

Well ID DGWA-70A
Well diameter 2 in
Well Total Depth 62.54 ft
Screen Length 10 ft
Depth to Water 40.40 ft

Pumping Information:

Final Pumping Rate 220 mL/min
Total System Volume 0.5051225 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 7.8 in
Total Volume Pumped 5.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	09:50:15	600.02	20.32	5.50	63.51	9.71	41.05	4.71	79.84
Last 5	09:55:15	899.92	20.17	5.52	64.35	3.20	41.05	4.64	76.74
Last 5	10:00:15	1199.92	20.22	5.54	65.40	1.92	41.05	4.66	75.61
Last 5	10:05:15	1499.91	20.04	5.54	65.74	1.80	41.05	4.64	76.17
Last 5	10:10:15	1799.92	20.17	5.53	65.72	1.12	41.05	4.61	75.13
Variance 0			0.05	0.02	1.05			0.01	-1.13
Variance 1			-0.18	0.00	0.34			-0.02	0.56
Variance 2			0.13	-0.00	-0.02			-0.03	-1.04

Notes

Sampling GWA-70A plus field blank
Sampled DGWA-70A and FB-1

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-18 09:07:12

Project Information:

Operator Name K. Minkara
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 463453
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Alexis
Tubing Type polyethylene
Tubing Diameter 0.170 in
Tubing Length 38 ft

Pump placement from TOC 38 ft

Well Information:

Well ID DGWC-37
Well diameter 2 in
Well Total Depth 43.08 ft
Screen Length 10 ft
Depth to Water 13.99 ft

Pumping Information:

Final Pumping Rate 250 mL/min
Total System Volume 0.2596101 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 3.48 in
Total Volume Pumped 6.25 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	08:44:47	300.05	15.39	6.19	436.79	5.76	14.26	1.20	38.12
Last 5	08:49:47	600.02	15.86	6.22	416.71	3.01	14.28	1.29	32.17
Last 5	08:54:47	900.02	15.94	6.24	409.99	1.62	14.28	1.48	34.52
Last 5	08:59:47	1200.02	15.89	6.25	404.41	2.20	14.28	1.56	36.42
Last 5	09:04:47	1500.02	15.89	6.26	396.22	1.14	14.28	1.52	37.00
Variance 0			0.08	0.01	-6.72			0.19	2.35
Variance 1			-0.05	0.01	-5.58			0.09	1.90
Variance 2			-0.00	0.01	-8.19			-0.05	0.58

Notes

Extra radium

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-18 09:03:45

Project Information:

Operator Name A. McClure
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 553835
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Alexis
Tubing Type polyethylene
Tubing Diameter 0.170 in
Tubing Length 23 ft

Pump placement from TOC 23 ft

Well Information:

Well ID DGWC-38
Well diameter 2 in
Well Total Depth 28.8 ft
Screen Length 10 ft
Depth to Water 6.82 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.1926587 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 4.92 in
Total Volume Pumped 3 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	08:50:39	300.06	17.14	6.07	690.50	2.54	7.23	0.24	32.49
Last 5	08:55:39	600.02	17.41	6.00	682.24	1.27	7.23	0.13	36.10
Last 5	09:00:39	900.02	17.38	6.00	683.45	1.24	7.23	0.11	36.08
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			0.27	-0.07	-8.26			-0.10	3.61
Variance 2			-0.03	-0.00	1.21			-0.02	-0.02

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-18 10:44:36

Project Information:

Operator Name A. McClure
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 553835
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Alexis
Tubing Type polyethylene
Tubing Diameter 0.170 in
Tubing Length 19 ft

Pump placement from TOC 19 ft

Well Information:

Well ID DGWC-39
Well diameter 2 in
Well Total Depth 24.62 ft
Screen Length 10 ft
Depth to Water 8.64 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.1748051 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 11.28 in
Total Volume Pumped 4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	10:25:43	300.11	17.60	6.28	813.79	4.20	9.37	0.25	-31.51
Last 5	10:30:43	600.02	17.90	6.33	810.85	4.68	9.51	0.14	-44.04
Last 5	10:35:43	900.02	18.17	6.34	810.65	3.48	9.56	0.12	-51.38
Last 5	10:40:43	1200.02	18.08	6.35	807.94	2.25	9.58	0.11	-54.58
Last 5									
Variance 0			0.30	0.04	-2.94			-0.10	-12.53
Variance 1			0.26	0.01	-0.19			-0.02	-7.34
Variance 2			-0.09	0.01	-2.71			-0.01	-3.20

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-18 12:49:18

Project Information:

Operator Name Y. C. Soo
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 364452
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Alexis
Tubing Type polyethylene
Tubing Diameter 0.170 in
Tubing Length 33 ft

Pump placement from TOC 33 ft

Well Information:

Well ID DGWC-40
Well diameter 2 in
Well Total Depth 38.4 ft
Screen Length 10 ft
Depth to Water 20.82 ft

Pumping Information:

Final Pumping Rate 300 mL/min
Total System Volume 0.237293 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 0.96 in
Total Volume Pumped 16.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 10
Last 5	12:26:20	2100.04	20.31	4.72	534.22	5.28	20.90	1.94	112.23
Last 5	12:31:20	2400.04	20.35	4.73	532.41	4.93	20.90	1.92	117.55
Last 5	12:36:20	2700.04	20.35	4.72	534.98	4.41	20.90	1.92	115.41
Last 5	12:41:21	3001.04	20.20	4.74	533.72	4.25	20.90	1.89	114.15
Last 5	12:46:21	3301.04	20.21	4.71	535.20	4.64	20.90	1.93	121.97
Variance 0			0.00	-0.01	2.57			-0.00	-2.15
Variance 1			-0.15	0.02	-1.27			-0.03	-1.25
Variance 2			0.02	-0.02	1.48			0.04	7.82

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-17 15:47:50

Project Information:

Operator Name K. Minkara
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 463453
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Alexis
Tubing Type polyethylene
Tubing Diameter 0.170 in
Tubing Length 50 ft

Pump placement from TOC 50 ft

Well Information:

Well ID DGWC-67
Well diameter 2 in
Well Total Depth 55.5 ft
Screen Length 10 ft
Depth to Water 10.10 ft

Pumping Information:

Final Pumping Rate 250 mL/min
Total System Volume 0.3131711 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 8.16 in
Total Volume Pumped 3.75 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	15:35:18	300.03	19.19	6.13	408.46	1.26	10.74	0.83	51.59
Last 5	15:40:18	600.02	18.57	6.14	408.05	0.83	10.76	0.64	36.86
Last 5	15:45:18	900.02	18.63	6.14	412.12	1.15	10.78	0.30	30.83
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			-0.62	0.01	-0.42			-0.19	-14.72
Variance 2			0.05	0.00	4.07			-0.34	-6.03

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-16 16:13:49

Project Information:

Operator Name K. Minkara
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 463453
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Alexis
Tubing Type polyethylene
Tubing Diameter 0.170 in
Tubing Length 25 ft

Pump placement from TOC 25 ft

Well Information:

Well ID DGWC-68A
Well diameter 2 in
Well Total Depth 29.79 ft
Screen Length 10 ft
Depth to Water 10.13 ft

Pumping Information:

Final Pumping Rate 300 mL/min
Total System Volume 0.2015856 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 4.68 in
Total Volume Pumped 4.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	16:01:37	300.02	17.63	6.57	431.74	0.72	10.50	0.36	55.23
Last 5	16:06:37	600.02	17.41	6.59	432.51	0.48	10.51	0.24	40.84
Last 5	16:11:37	900.02	17.28	6.60	431.91	0.51	10.52	0.17	41.62
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			-0.23	0.02	0.77			-0.12	-14.40
Variance 2			-0.13	0.01	-0.60			-0.07	0.79

Notes

Sampled DGWC-68A at 1610. FD-3 here

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-16 15:25:46

Project Information:

Operator Name K. Minkara
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 463453
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Alexis
Tubing Type polyethylene
Tubing Diameter 0.170 in
Tubing Length 19 ft

Pump placement from TOC 19 ft

Well Information:

Well ID DGWC-69
Well diameter 2 in
Well Total Depth 24.06 ft
Screen Length 10 ft
Depth to Water 5.87 ft

Pumping Information:

Final Pumping Rate 300 mL/min
Total System Volume 0.1748051 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 26.16 in
Total Volume Pumped 7.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	15:04:16	300.02	18.95	6.18	174.35	4.02	7.30	1.13	124.80
Last 5	15:09:16	600.02	18.44	6.20	173.72	3.09	7.72	1.09	117.26
Last 5	15:14:16	900.02	18.19	6.20	161.06	1.74	7.94	1.22	112.12
Last 5	15:19:16	1200.02	18.07	6.20	157.50	1.59	8.01	1.32	108.32
Last 5	15:24:17	1501.02	17.98	6.19	159.24	1.53	8.05	1.36	108.81
Variance 0			-0.25	-0.00	-12.66			0.13	-5.14
Variance 1			-0.12	0.00	-3.56			0.10	-3.80
Variance 2			-0.08	-0.01	1.74			0.04	0.49

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-15 11:02:28

Project Information:

Operator Name K. Minkara
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 463453
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type
Tubing Type
Tubing Diameter
Tubing Length
Bailer Teflon
in
ft

Pump placement from TOC ft

Well Information:

Well ID DGWA-53
Well diameter 2 in
Well Total Depth 36.85 ft
Screen Length 10 ft
Depth to Water 15.22 ft

Pumping Information:

Final Pumping Rate 0 mL/min
Total System Volume 0.09 L
Calculated Sample Rate 180 sec
Stabilization Drawdown 259.44 in
Total Volume Pumped 17 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	10:54:56	180.05	17.94	6.46	205.79	--	--	2.84	-15.61
Last 5	10:57:56	360.02	17.45	6.47	190.24	--	--	4.01	-15.53
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			-0.49	0.01	-15.55			1.17	0.08
Variance 2			0.00	0.00	0.00			0.00	0.00

Notes

Purging dry via bailer. Will sample within 24hr. Recording well volumes until dry
Purged dry at 4.5gal removed. Recorded initial + 1 well volume (3.5 gal)

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-16 10:07:38

Project Information:

Operator Name K. Minkara
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 463453
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Alexis
Tubing Type polyethylene
Tubing Diameter 0.170 in
Tubing Length 33 ft

Pump placement from TOC 33 ft

Well Information:

Well ID DGWA-53
Well diameter 2 in
Well Total Depth 36.85 ft
Screen Length 10 ft
Depth to Water 15.05 ft

Pumping Information:

Final Pumping Rate 100 mL/min
Total System Volume 0.237293 L
Calculated Sample Rate 30 sec
Stabilization Drawdown 0 in
Total Volume Pumped 0 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	10:04:15	30.05	20.35	6.69	190.27	2.27	15.05	4.85	15.16
Last 5	10:04:45	60.03	20.21	6.60	191.32	--	--	4.77	16.32
Last 5	10:05:15	90.02	20.12	6.55	192.38	--	--	4.73	16.77
Last 5	10:05:45	120.02	20.08	6.51	193.62	--	--	4.70	16.89
Last 5									
Variance 0			-0.14	-0.09	1.05			-0.09	1.16
Variance 1			-0.09	-0.05	1.07			-0.03	0.45
Variance 2			-0.04	-0.03	1.23			-0.03	0.12

Notes

Purged dry 10-15-19. Use initial reading for field data.Sampled at 1000.

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-15 12:18:51

Project Information:

Operator Name D. Herrera
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 364456
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type SamplePro
Tubing Type polyethylene
Tubing Diameter 0.170 in
Tubing Length 54.7 ft

Pump placement from TOC 54.7 ft

Well Information:

Well ID DGWA-70A
Well diameter 2 in
Well Total Depth 62.41 ft
Screen Length 10 ft
Depth to Water 42.68 ft

Pumping Information:

Final Pumping Rate 300 mL/min
Total System Volume 0.4591492 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 12.84 in
Total Volume Pumped 15.0 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 10
Last 5	11:54:49	1800.01	14.03	5.59	67.00	0.45	43.75	5.13	112.11
Last 5	11:59:50	2101.00	13.98	5.59	66.79	0.65	43.75	5.13	111.94
Last 5	12:04:50	2401.00	13.90	5.60	66.83	0.63	43.75	5.12	110.12
Last 5	12:09:50	2700.99	13.91	5.61	66.69	0.66	43.75	5.12	109.93
Last 5	12:14:51	3001.99	13.80	5.61	66.72	0.19	43.75	5.11	108.54
Variance 0			-0.08	0.01	0.04			-0.01	-1.81
Variance 1			0.01	0.00	-0.14			-0.01	-0.19
Variance 2			-0.11	0.00	0.03			-0.01	-1.39

Notes

Sampled DGWA-70A and FB-1

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-15 15:11:35

Project Information:

Operator Name D. Herrera
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 364456
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type SamplePro
Tubing Type polyethylene
Tubing Diameter 0.170 in
Tubing Length 42.71 ft

Pump placement from TOC 42.71 ft

Well Information:

Well ID DGWA-71
Well diameter 2 in
Well Total Depth 47.71 ft
Screen Length 10 ft
Depth to Water 29.42 ft

Pumping Information:

Final Pumping Rate 300 mL/min
Total System Volume 0.4056328 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 6.48 in
Total Volume Pumped 13.50 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 10
Last 5	14:47:05	1500.01	14.63	5.87	75.11	6.56	29.96	1.14	56.32
Last 5	14:52:05	1800.01	14.62	5.88	74.98	5.42	29.96	1.11	57.14
Last 5	14:57:05	2100.00	14.60	5.87	76.50	4.08	29.96	0.70	58.25
Last 5	15:02:05	2400.00	14.59	5.88	76.22	3.50	29.96	0.70	58.58
Last 5	15:07:05	2699.99	14.62	5.88	76.06	1.99	29.96	0.71	60.21
Variance 0			-0.02	-0.01	1.52			-0.41	1.11
Variance 1			-0.02	0.01	-0.28			0.01	0.33
Variance 2			0.03	-0.00	-0.16			0.00	1.63

Notes

Sampled DGWA-71

Grab Samples

Quality Control Review of Analytical Data- Ash Pond AP-1 Submitted by Pace Analytical August 2019 - January 2020

This narrative presents results of the quality control (QC) data review performed on analytical data submitted by Pace Analytical, for groundwater samples collected at Plant McDonough CCR Ash Pond AP-1 between August 27, 2019 and January 6, 2020. The chemical data were reviewed to identify quality issues which could affect the use of the data for decision making purposes.

Information regarding the primary sample locations, analytical parameters, QC samples, sampling dates, and laboratory sample delivery group (SDG) designations is summarized in Table 1. In accordance with groundwater monitoring and corrective action procedures discussed in Title 40 CFR, Subpart D - Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments, the samples were analyzed for detection monitoring constituents listed in 40 CFR, Part 257, Appendix III and assessment monitoring constituents listed in 40 CFR, Part 257, Appendix IV. Test methods included Inductively Coupled Plasma- Mass Spectrometry (USEPA Method 6020B), Mercury in Liquid Wastes (USEPA Method 7470A), Determination of Inorganic Anions By Ion Chromatography (USEPA Method 300.0), Total Dissolved Solids (Standard Methods 2540C), Radium-226 (USEPA Method 9315) and Radium-228 (USEPA Method 9320).

Data were reviewed in accordance with the US EPA Region IV Data Validation Standard Operating Procedures for Contract Laboratory Program (CLP) Inorganic Data by Inductively Coupled Plasma – Atomic Emission Spectroscopy and Inductively Coupled Plasma – Mass Spectroscopy (September 2011, Rev. 2.0), US EPA Region IV Data Validation Standard Operating Procedures for CLP Mercury Data by Cold Vapor Atomic Absorption (September 2011, Rev. 2.0), the National Functional Guidelines for Inorganic Superfund Methods Data Review (January 2017), and US Department of Energy, Evaluation of Radiochemical Data Usability (April 1997). The review included an assessment of the results for completeness, precision (laboratory duplicates, matrix spike/matrix spike duplicates), accuracy (laboratory control samples and matrix spike samples), and blank contamination (including field, equipment and laboratory blanks). Additionally, sample procedures, holding times and chains-of-custody were reviewed. Where there was a discrepancy between the QC criteria in the guidelines and the QC criterion established in the analytic methodology, method-specific criteria or professional judgment was used.

DATA QUALITY OBJECTIVES

Laboratory Precision:	Laboratory goals for precision were met.
Field Precision:	Field goals for precision were met.
Accuracy:	Laboratory goals for accuracy were met.
Detection Limits:	Project goals for detection limits were met. Certain samples were diluted due to elevated concentrations of target analytes. Dilutions do not require qualifications based on USEPA guidelines. Detection and reporting limits of non-detect compounds are elevated proportional to the dilution when undiluted sample results are not provided by the laboratory. The data usability of diluted results was evaluated by the data user in the context of site-wide characterization.
Completeness:	There were no rejected analytical results for this event, resulting in a completion of 100%.
Holding Times:	All holding time requirements were met in accordance with specific analytical methods with the exception of Total Dissolved Solids (TDS) in sample DGWC-67.

The analysis was conducted one day past the TDS seven day holding time requirement. Using professional judgment, no qualifications were applied.

QUALIFICATIONS

In general, chemical results for the samples collected at the Site were qualified on the basis of low precision or accuracy, or on the basis of professional judgment. The following definitions provide brief explanations of the qualifiers which may have been assigned to data by the laboratory during the data validation process.

- J+** The analyte was reported above the method detection limit; however, the concentration reported is an estimated value that may be biased high.
- U** The analyte was not detected above the method detection limit.

The data generated as part of this sampling event met the QC criteria established in the respective analytical methods and data validation guidelines except as specified below. Although these qualifications were applied to some data from samples collected at the site and reported in sample delivery groups (SDGs), qualifications may not have been required or applied to all samples collected. A summary of sample qualifications can be found in Table 2.

- Certain arsenic, chromium, fluoride, total radium, radium-226, radium-228, sulfate, and TDS results were qualified as non-detect (U) when the analyte was detected at a similar level in an associated blank sample. As shown in Table 2, if the original sample results were below the reporting limit (RL) or the minimum detectable concentration (MDC), the results were qualified as non-detect (U) and the results were raised to the RL or MDC. If results were above the RL or MDC, the results were qualified U and the RL or MDC was raised to the sample result.
- Total radium was qualified as biased high (J+) in certain samples when one radium isotope was detected above the MDC and the other isotope was U qualified.

Golder reviewed the data from samples collected at Plant McDonough CCR Ash Pond AP-1 between August 27, 2019 and January 6, 2020 in accordance with the analytical methods, the laboratory specific QC criteria, and the guidelines. As described above, 100% of the results were acceptable for project use.

REFERENCE

Paar, J.G. & Porterfield, D.R. *Evaluation of Radiochemical Data Usability*. United States Department of Energy, Office of Environmental Restoration and Waste Management, Oak Ridge National Laboratory, April 1997.

USEPA, January 2017, National, Office of Superfund Remediation and Technology Innovation, *National Functional Guidelines for Inorganic Superfund Methods Data Review*, Revision 0.0.

USEPA, September 2011, Region 4, Science and Ecosystem Support Division, Quality Assurance Section, MTSB, *Data Validation Standard Operating Procedures for Contract Laboratory Program Inorganic Data By Inductively Coupled Plasma – Atomic Emission Spectroscopy and Inductively Coupled Plasma – Mass Spectroscopy*, Revision 2.0.

USEPA, September 2011, Region 4, Science and Ecosystem Support Division, Quality Assurance Section, MTSB, *Data Validation Standard Operating Procedures for Contract Laboratory Program Mercury Data By Cold Vapor Atomic Absorption*, Revision 2.0.

TABLE 1
Qualifier Summary Table
SCS Plant McDonough AP-1

SDGs	Field Identification	Collection Date	Lab Identification	Matrix	QC Samples	Analyses				
						Select Metals (6020B)	Anions (300.0)	TDS (SM 2540C)	Mercury (7470A)	Radium (EPA 9315/9320)
2622481/2622482	DGWA-70A	8/27/2019	2622481001/2622482001	GW	-	X	X	-	X	X
2622481/2622482	DGWA-71	8/27/2019	2622481002/2622482002	GW	-	X	X	-	X	X
2622589/2622590	DGWA-53	8/28/2019	2622589001/2622590001	GW	-	X	X	-	X	X
2622587/2622588	DGWC-37	8/28/2019	2622587001/2622588001	GW	-	X	X	-	X	X
2622587/2622588	DGWC-38	8/28/2019	2622587002/2622588002	GW	-	X	X	-	X	X
2622587/2622588	DGWC-39	8/28/2019	2622587003/2622588003	GW	-	X	X	-	X	X
2622587/2622588	DGWC-40	8/28/2019	2622587004/2622588004	GW	-	X	X	-	X	X
2622587/2622588	DGWC-67	8/28/2019	2622587005/2622588005	GW	-	X	X	-	X	X
2622587/2622588	DGWC-68A	8/28/2019	2622587006/2622588006	GW	-	X	X	-	X	X
2622587/2622588	DGWC-69	8/28/2019	2622587007/2622588007	GW	-	X	X	-	X	X
2622587/2622588	FD-2	8/28/2019	2622587008/2622588008	GW	FD (DGWC-69)	X	X	-	X	X
2624397/2624398	DGWA-70A	10/15/2019	2624397001/2624398001	GW	-	X	X	X	X	X
2624397/2624398	DGWA-71	10/15/2019	2624397002/2624398002	GW	-	X	X	X	X	X
2624494/2624495	DGWA-53	10/16/2019	2624494001/2624495001	GW	-	X	X	-	X	X
2624496/2624497	DGWC-68A	10/16/2019	2624496001/2624497001	GW	-	X	X	-	X	X
2624496/2624497	DGWC-69	10/16/2019	2624496002/2624497002	GW	-	X	X	-	X	X
2624496/2624497	FD-3	10/16/2019	2624496003/2624497003	GW	FD (DGWC-68A)	X	X	-	X	X
2624571	DGWC-37	10/18/2019	2624571003	GW	-	X	X	X	X	-
2624571	DGWC-38	10/18/2019	2624571004	GW	-	X	X	X	X	-
2624571	DGWC-39	10/18/2019	2624571005	GW	-	X	X	X	X	-
2624571	DGWC-40	10/18/2019	2624571006	GW	-	X	X	X	X	-
2627493	DGWC-37	1/6/2020	2627493001	GW	-	-	-	-	-	X
2627493	DGWC-38	1/6/2020	2627493002	GW	-	-	-	-	-	X
2627493	DGWC-39	1/6/2020	2627493003	GW	-	-	-	-	-	X
2627493	DGWC-40	1/6/2020	2627493004	GW	-	-	-	-	-	X
2627493	DGWC-67	1/6/2020	2627493005	GW	-	-	-	-	-	X
2627493	FD-1	1/6/2020	2627493006	GW	FD (DGWC-67)	-	-	-	-	X

Abbreviations:

- FD - Field duplicate
- GW - Groundwater
- TDS - Total Dissolved Solids
- SDG - Sample Delivery Group
- QC - Quality Control

TABLE 2
Qualifier Summary Table
SCS Plant McDonough AP-1

SDG	Sample Name	Constituent	New Result	New RL or MDC	Qualifier	Reason
2622481	DGWA-70A	Chromium	0.010	-	U	Blank contamination
2622481	DGWA-71	Chromium	0.010	-	U	Blank contamination
2622482	DGWA-70A	Radium-226	-	1.110	U	Blank contamination
2622482	DGWA-70A	Radium-228	-	0.863	U	Blank contamination
2622482	DGWA-71	Radium-228	-	0.867	U	Blank contamination
2622482	DGWA-70A	Total Radium	-	-	J+	Blank contamination
2622586	FD-2	Total Radium	-	1.450	U	Blank contamination
2622588	DGWC-37	Radium-226	-	0.508	U	Blank contamination
2622588	DGWC-38	Radium-226	-	0.517	U	Blank contamination
2622588	DGWC-39	Radium-226	-	0.396	U	Blank contamination
2622588	DGWC-40	Radium-226	-	0.403	U	Blank contamination
2622588	DGWC-67	Radium-226	-	0.540	U	Blank contamination
2622588	DGWC-68A	Radium-226	-	0.635	U	Blank contamination
2622588	DGWC-69	Radium-226	-	1.140	U	Blank contamination
2622588	FD-2	Radium-226	-	0.985	U	Blank contamination
2622588	DGWC-68A	Total Radium	-	-	J+	Blank contamination
2622588	DGWC-69	Total Radium	-	1.380	U	Blank contamination
2622590	DGWA-53	Radium-226	-	1.380	U	Blank contamination
2622590	DGWA-53	Total Radium	-	-	J+	Blank contamination
2624397	DGWA-70A	Arsenic	0.005	-	U	Blank contamination
2624397	DGWA-71	Arsenic	0.005	-	U	Blank contamination
2624397	DGWA-71	Chromium	0.01	-	U	Blank contamination
2624397	DGWA-70A	Sulfate	1	-	U	Blank contamination
2624397	DGWA-70A	TDS	-	70	U	Blank contamination
2624397	DGWA-71	TDS	-	89	U	Blank contamination
2624398	DGWA-71	Radium-226	-	0.628	U	Blank contamination
2624494	DGWA-53	Fluoride	0.3	-	U	Blank contamination
2624496	DGWC-68A	Fluoride	0.3	-	U	Blank contamination
2624496	DGWC-69	Fluoride	0.3	-	U	Blank contamination
2624496	FD-3	Fluoride	0.3	-	U	Blank contamination
2624571	DGWC-39	Arsenic	0.005	-	U	Blank contamination
2624571	DGWC-38	Chromium	0.01	-	U	Blank contamination
2624571	DGWC-40	Chromium	0.01	-	U	Blank contamination
2624571	DGWC-67	Arsenic	0.005	-	U	Blank contamination

Abbreviations:

MDC: Minimum detectable concentration

MDL: Method detection limit

RL : Reporting limit

SDG : Sample delivery group

Qualifiers:

J+ : Estimated result, biased high

U : Non-detect result

APPENDIX B

Statistical Analyses

Prediction Limit

McDonough Client: Golder Associates Data: McDonough Ash Pond Printed 2/13/2020, 4:43 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Boron (mg/L)	DGWC-37	0.13	n/a	10/18/2019	1.3	Yes	31	12.9	n/a	0.001816	NP Inter (normality) ...
Boron (mg/L)	DGWC-38	0.13	n/a	10/18/2019	3.1	Yes	31	12.9	n/a	0.001816	NP Inter (normality) ...
Boron (mg/L)	DGWC-39	0.13	n/a	10/18/2019	3.6	Yes	31	12.9	n/a	0.001816	NP Inter (normality) ...
Boron (mg/L)	DGWC-40	0.13	n/a	10/18/2019	0.9	Yes	31	12.9	n/a	0.001816	NP Inter (normality) ...
Boron (mg/L)	DGWC-67	0.13	n/a	10/17/2019	3.6	Yes	31	12.9	n/a	0.001816	NP Inter (normality) ...
Boron (mg/L)	DGWC-69	0.13	n/a	10/16/2019	0.38	Yes	31	12.9	n/a	0.001816	NP Inter (normality) ...
Boron (mg/L)	DGWC-68A	0.13	n/a	10/16/2019	1.5	Yes	31	12.9	n/a	0.001816	NP Inter (normality) ...
Calcium (mg/L)	DGWC-37	40.3	n/a	10/18/2019	52.5	Yes	32	0	n/a	0.001722	NP Inter (normality) ...
Calcium (mg/L)	DGWC-38	40.3	n/a	10/18/2019	97.8	Yes	32	0	n/a	0.001722	NP Inter (normality) ...
Calcium (mg/L)	DGWC-39	40.3	n/a	10/18/2019	108	Yes	32	0	n/a	0.001722	NP Inter (normality) ...
Calcium (mg/L)	DGWC-40	40.3	n/a	10/18/2019	44.9	Yes	32	0	n/a	0.001722	NP Inter (normality) ...
Calcium (mg/L)	DGWC-67	40.3	n/a	10/17/2019	46.9	Yes	32	0	n/a	0.001722	NP Inter (normality) ...
Calcium (mg/L)	DGWC-68A	40.3	n/a	10/16/2019	49.7	Yes	32	0	n/a	0.001722	NP Inter (normality) ...
Chloride (mg/L)	DGWC-37	4.025	n/a	10/18/2019	5.8	Yes	34	0	ln(x)	0.001075	Param Inter 1 of 2
Chloride (mg/L)	DGWC-38	4.025	n/a	10/18/2019	8.6	Yes	34	0	ln(x)	0.001075	Param Inter 1 of 2
Chloride (mg/L)	DGWC-39	4.025	n/a	10/18/2019	8	Yes	34	0	ln(x)	0.001075	Param Inter 1 of 2
Chloride (mg/L)	DGWC-40	4.025	n/a	10/18/2019	19.2	Yes	34	0	ln(x)	0.001075	Param Inter 1 of 2
Chloride (mg/L)	DGWC-67	4.025	n/a	10/17/2019	6.9	Yes	34	0	ln(x)	0.001075	Param Inter 1 of 2
Chloride (mg/L)	DGWC-69	4.025	n/a	10/16/2019	4.7	Yes	34	0	ln(x)	0.001075	Param Inter 1 of 2
Chloride (mg/L)	DGWC-68A	4.025	n/a	10/16/2019	4.2	Yes	34	0	ln(x)	0.001075	Param Inter 1 of 2
pH [field] (S.U.)	DGWC-40	6.557	5.243	10/18/2019	4.71	Yes	35	0	ln(x)	0.000...	Param Inter 1 of 2
pH [field] (S.U.)	DGWC-68A	6.557	5.243	10/16/2019	6.6	Yes	35	0	ln(x)	0.000...	Param Inter 1 of 2
Sulfate (mg/L)	DGWC-37	32.33	n/a	10/18/2019	76.4	Yes	34	0	sqrt(x)	0.001075	Param Inter 1 of 2
Sulfate (mg/L)	DGWC-38	32.33	n/a	10/18/2019	239	Yes	34	0	sqrt(x)	0.001075	Param Inter 1 of 2
Sulfate (mg/L)	DGWC-39	32.33	n/a	10/18/2019	182	Yes	34	0	sqrt(x)	0.001075	Param Inter 1 of 2
Sulfate (mg/L)	DGWC-40	32.33	n/a	10/18/2019	205	Yes	34	0	sqrt(x)	0.001075	Param Inter 1 of 2
Sulfate (mg/L)	DGWC-67	32.33	n/a	10/17/2019	99.4	Yes	34	0	sqrt(x)	0.001075	Param Inter 1 of 2
TDS (mg/L)	DGWC-38	292.7	n/a	10/18/2019	494	Yes	31	0	x^(1/3)	0.001075	Param Inter 1 of 2
TDS (mg/L)	DGWC-39	292.7	n/a	10/18/2019	489	Yes	31	0	x^(1/3)	0.001075	Param Inter 1 of 2
TDS (mg/L)	DGWC-40	292.7	n/a	10/18/2019	360	Yes	31	0	x^(1/3)	0.001075	Param Inter 1 of 2

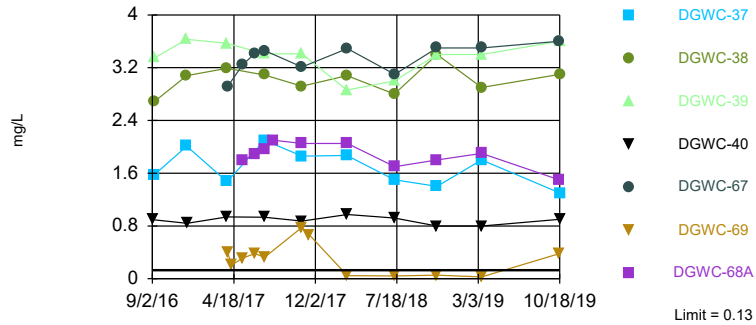
Prediction Limit

McDonough Client: Golder Associates Data: McDonough Ash Pond Printed 2/13/2020, 4:43 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Boron (mg/L)	DGWC-37	0.13	n/a	10/18/2019	1.3	Yes	31	12.9	n/a	0.001816	NP Inter (normality) ...
Boron (mg/L)	DGWC-38	0.13	n/a	10/18/2019	3.1	Yes	31	12.9	n/a	0.001816	NP Inter (normality) ...
Boron (mg/L)	DGWC-39	0.13	n/a	10/18/2019	3.6	Yes	31	12.9	n/a	0.001816	NP Inter (normality) ...
Boron (mg/L)	DGWC-40	0.13	n/a	10/18/2019	0.9	Yes	31	12.9	n/a	0.001816	NP Inter (normality) ...
Boron (mg/L)	DGWC-67	0.13	n/a	10/17/2019	3.6	Yes	31	12.9	n/a	0.001816	NP Inter (normality) ...
Boron (mg/L)	DGWC-69	0.13	n/a	10/16/2019	0.38	Yes	31	12.9	n/a	0.001816	NP Inter (normality) ...
Boron (mg/L)	DGWC-68A	0.13	n/a	10/16/2019	1.5	Yes	31	12.9	n/a	0.001816	NP Inter (normality) ...
Calcium (mg/L)	DGWC-37	40.3	n/a	10/18/2019	52.5	Yes	32	0	n/a	0.001722	NP Inter (normality) ...
Calcium (mg/L)	DGWC-38	40.3	n/a	10/18/2019	97.8	Yes	32	0	n/a	0.001722	NP Inter (normality) ...
Calcium (mg/L)	DGWC-39	40.3	n/a	10/18/2019	108	Yes	32	0	n/a	0.001722	NP Inter (normality) ...
Calcium (mg/L)	DGWC-40	40.3	n/a	10/18/2019	44.9	Yes	32	0	n/a	0.001722	NP Inter (normality) ...
Calcium (mg/L)	DGWC-67	40.3	n/a	10/17/2019	46.9	Yes	32	0	n/a	0.001722	NP Inter (normality) ...
Calcium (mg/L)	DGWC-69	40.3	n/a	10/16/2019	16.2	No	32	0	n/a	0.001722	NP Inter (normality) ...
Calcium (mg/L)	DGWC-68A	40.3	n/a	10/16/2019	49.7	Yes	32	0	n/a	0.001722	NP Inter (normality) ...
Chloride (mg/L)	DGWC-37	4.025	n/a	10/18/2019	5.8	Yes	34	0	ln(x)	0.001075	Param Inter 1 of 2
Chloride (mg/L)	DGWC-38	4.025	n/a	10/18/2019	8.6	Yes	34	0	ln(x)	0.001075	Param Inter 1 of 2
Chloride (mg/L)	DGWC-39	4.025	n/a	10/18/2019	8	Yes	34	0	ln(x)	0.001075	Param Inter 1 of 2
Chloride (mg/L)	DGWC-40	4.025	n/a	10/18/2019	19.2	Yes	34	0	ln(x)	0.001075	Param Inter 1 of 2
Chloride (mg/L)	DGWC-67	4.025	n/a	10/17/2019	6.9	Yes	34	0	ln(x)	0.001075	Param Inter 1 of 2
Chloride (mg/L)	DGWC-69	4.025	n/a	10/16/2019	4.7	Yes	34	0	ln(x)	0.001075	Param Inter 1 of 2
Chloride (mg/L)	DGWC-68A	4.025	n/a	10/16/2019	4.2	Yes	34	0	ln(x)	0.001075	Param Inter 1 of 2
Fluoride (mg/L)	DGWC-37	0.3379	n/a	10/18/2019	0.075	No	35	42.86	ln(x)	0.001075	Param Inter 1 of 2
Fluoride (mg/L)	DGWC-38	0.3379	n/a	10/18/2019	0.073	No	35	42.86	ln(x)	0.001075	Param Inter 1 of 2
Fluoride (mg/L)	DGWC-39	0.3379	n/a	10/18/2019	0.14	No	35	42.86	ln(x)	0.001075	Param Inter 1 of 2
Fluoride (mg/L)	DGWC-40	0.3379	n/a	10/18/2019	0.13	No	35	42.86	ln(x)	0.001075	Param Inter 1 of 2
Fluoride (mg/L)	DGWC-67	0.3379	n/a	10/17/2019	0.038	No	35	42.86	ln(x)	0.001075	Param Inter 1 of 2
Fluoride (mg/L)	DGWC-69	0.3379	n/a	10/16/2019	0.13	No	35	42.86	ln(x)	0.001075	Param Inter 1 of 2
Fluoride (mg/L)	DGWC-68A	0.3379	n/a	10/16/2019	0.093	No	35	42.86	ln(x)	0.001075	Param Inter 1 of 2
pH [field] (S.U.)	DGWC-37	6.557	5.243	10/18/2019	6.26	No	35	0	ln(x)	0.000...	Param Inter 1 of 2
pH [field] (S.U.)	DGWC-38	6.557	5.243	10/18/2019	6	No	35	0	ln(x)	0.000...	Param Inter 1 of 2
pH [field] (S.U.)	DGWC-39	6.557	5.243	10/18/2019	6.35	No	35	0	ln(x)	0.000...	Param Inter 1 of 2
pH [field] (S.U.)	DGWC-40	6.557	5.243	10/18/2019	4.71	Yes	35	0	ln(x)	0.000...	Param Inter 1 of 2
pH [field] (S.U.)	DGWC-67	6.557	5.243	10/17/2019	6.14	No	35	0	ln(x)	0.000...	Param Inter 1 of 2
pH [field] (S.U.)	DGWC-69	6.557	5.243	10/16/2019	6.19	No	35	0	ln(x)	0.000...	Param Inter 1 of 2
pH [field] (S.U.)	DGWC-68A	6.557	5.243	10/16/2019	6.6	Yes	35	0	ln(x)	0.000...	Param Inter 1 of 2
Sulfate (mg/L)	DGWC-37	32.33	n/a	10/18/2019	76.4	Yes	34	0	sqrt(x)	0.001075	Param Inter 1 of 2
Sulfate (mg/L)	DGWC-38	32.33	n/a	10/18/2019	239	Yes	34	0	sqrt(x)	0.001075	Param Inter 1 of 2
Sulfate (mg/L)	DGWC-39	32.33	n/a	10/18/2019	182	Yes	34	0	sqrt(x)	0.001075	Param Inter 1 of 2
Sulfate (mg/L)	DGWC-40	32.33	n/a	10/18/2019	205	Yes	34	0	sqrt(x)	0.001075	Param Inter 1 of 2
Sulfate (mg/L)	DGWC-67	32.33	n/a	10/17/2019	99.4	Yes	34	0	sqrt(x)	0.001075	Param Inter 1 of 2
Sulfate (mg/L)	DGWC-69	32.33	n/a	10/16/2019	13.3	No	34	0	sqrt(x)	0.001075	Param Inter 1 of 2
Sulfate (mg/L)	DGWC-68A	32.33	n/a	10/16/2019	32.1	No	34	0	sqrt(x)	0.001075	Param Inter 1 of 2
TDS (mg/L)	DGWC-37	292.7	n/a	10/18/2019	269	No	31	0	x^(1/3)	0.001075	Param Inter 1 of 2
TDS (mg/L)	DGWC-38	292.7	n/a	10/18/2019	494	Yes	31	0	x^(1/3)	0.001075	Param Inter 1 of 2
TDS (mg/L)	DGWC-39	292.7	n/a	10/18/2019	489	Yes	31	0	x^(1/3)	0.001075	Param Inter 1 of 2
TDS (mg/L)	DGWC-40	292.7	n/a	10/18/2019	360	Yes	31	0	x^(1/3)	0.001075	Param Inter 1 of 2
TDS (mg/L)	DGWC-67	292.7	n/a	10/17/2019	281	No	31	0	x^(1/3)	0.001075	Param Inter 1 of 2
TDS (mg/L)	DGWC-69	292.7	n/a	10/16/2019	108	No	31	0	x^(1/3)	0.001075	Param Inter 1 of 2
TDS (mg/L)	DGWC-68A	292.7	n/a	10/16/2019	218	No	31	0	x^(1/3)	0.001075	Param Inter 1 of 2

Exceeds Limit: DGWC-37, DGWC-38, DGWC-39, DGWC-40, DGWC-67, DGWC-68A

Prediction Limit
Interwell Non-parametric

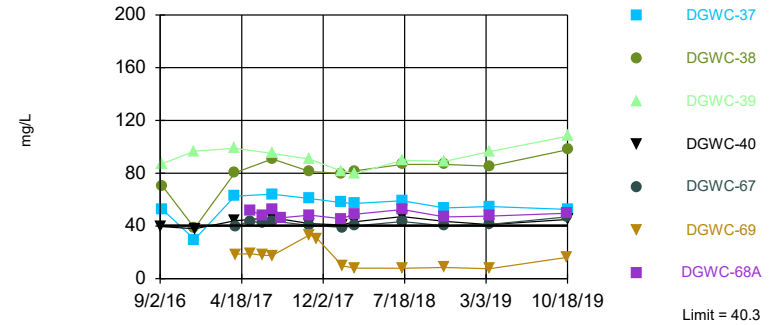


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 31 background values. 12.9% NDs. Annual per-constituent alpha = 0.02513. Individual comparison alpha = 0.001816 (1 of 2). Comparing 7 points to limit.

Constituent: Boron Analysis Run 2/13/2020 4:41 PM View: APPIII_AP1
McDonough Client: Golder Associates Data: McDonough Ash Pond

Exceeds Limit: DGWC-37, DGWC-38, DGWC-39, DGWC-40, DGWC-67, DGWC-68A

Prediction Limit
Interwell Non-parametric

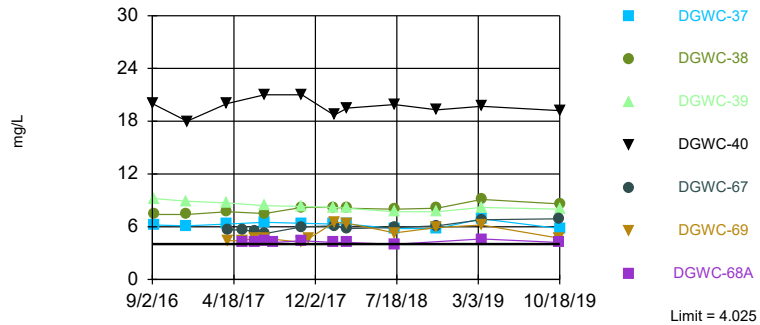


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 32 background values. Annual per-constituent alpha = 0.02384. Individual comparison alpha = 0.001722 (1 of 2). Comparing 7 points to limit.

Constituent: Calcium Analysis Run 2/13/2020 4:41 PM View: APPIII_AP1
McDonough Client: Golder Associates Data: McDonough Ash Pond

Exceeds Limit: DGWC-37, DGWC-38, DGWC-39, DGWC-40, DGWC-67, DGWC-68A

Prediction Limit
Interwell Parametric

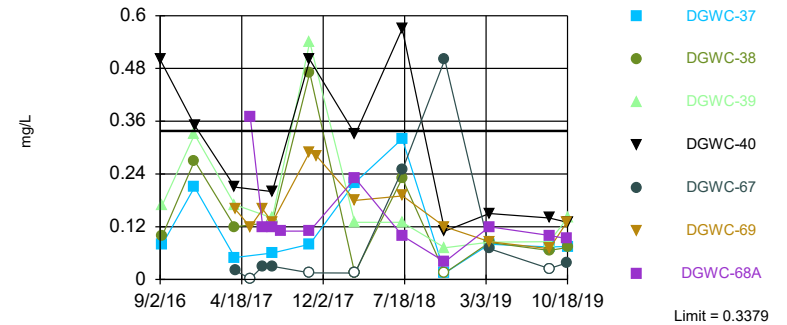


Background Data Summary (based on natural log transformation): Mean=0.9725, Std. Dev.=0.21, n=34. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9084, critical = 0.908. Kappa = 2.001 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.001075. Comparing 7 points to limit.

Constituent: Chloride Analysis Run 2/13/2020 4:41 PM View: APPIII_AP1
McDonough Client: Golder Associates Data: McDonough Ash Pond

Within Limit

Prediction Limit
Interwell Parametric

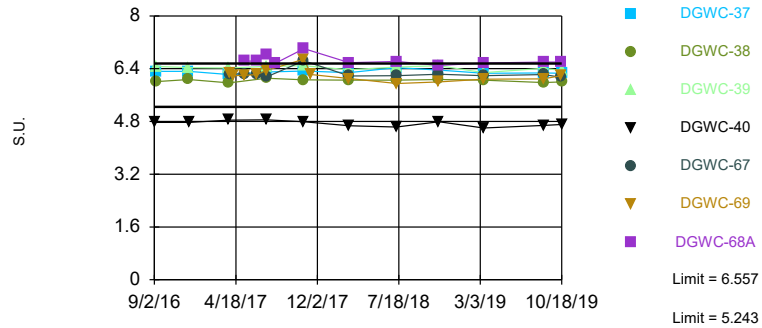


Background Data Summary (based on natural log transformation) (after Kaplan-Meier Adjustment): Mean=3.862, Std. Dev.=1.393, n=35, 42.86% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9384, critical = 0.91. Kappa = 1.994 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.001075. Comparing 7 points to limit.

Constituent: Fluoride Analysis Run 2/13/2020 4:41 PM View: APPIII_AP1
McDonough Client: Golder Associates Data: McDonough Ash Pond

Exceeds Limits: DGWC-40, DGWC-68A

Prediction Limit
Interwell Parametric

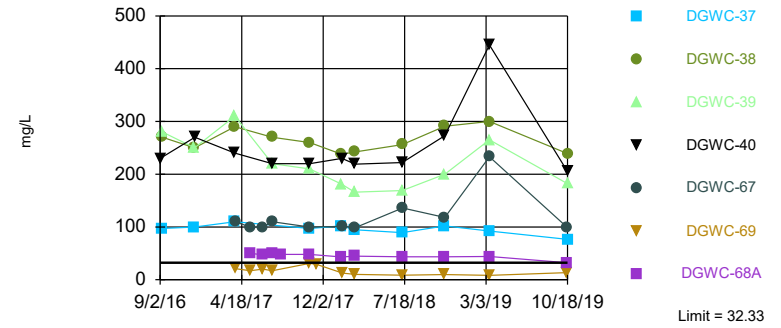


Background Data Summary (based on natural log transformation): Mean=1.769, Std. Dev.=0.05611, n=35. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9131, critical = 0.91. Kappa = 1.994 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.0005373. Comparing 7 points to limit.

Constituent: pH [field] Analysis Run 2/13/2020 4:41 PM View: APPIII_AP1
McDonough Client: Golder Associates Data: McDonough Ash Pond

Exceeds Limit: DGWC-37, DGWC-38, DGWC-39, DGWC-40, DGWC-67

Prediction Limit
Interwell Parametric

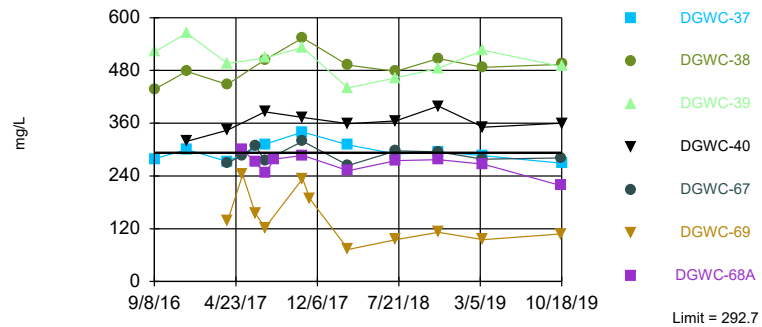


Background Data Summary (based on square root transformation): Mean=2.61, Std. Dev.=1.537, n=34. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9363, critical = 0.908. Kappa = 2.001 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.001075. Comparing 7 points to limit.

Constituent: Sulfate Analysis Run 2/13/2020 4:41 PM View: APPIII_AP1
McDonough Client: Golder Associates Data: McDonough Ash Pond

Exceeds Limit: DGWC-38, DGWC-39, DGWC-40

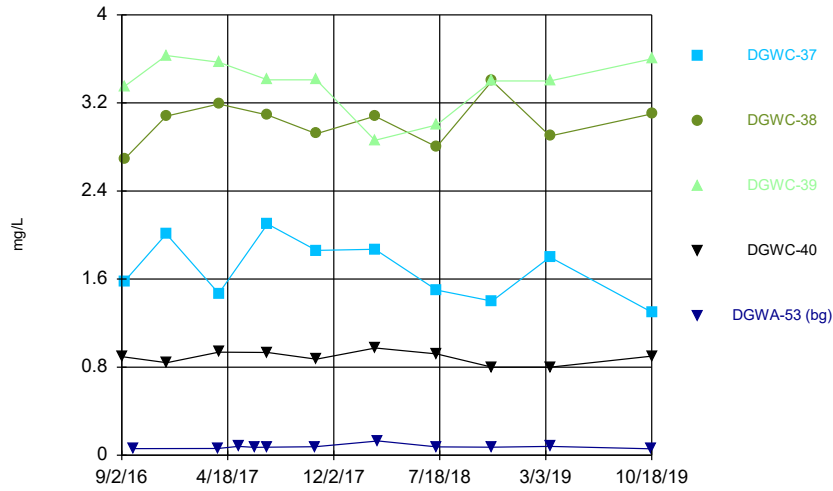
Prediction Limit
Interwell Parametric



Background Data Summary (based on cube root transformation): Mean=4.718, Std. Dev.=0.9514, n=31. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9111, critical = 0.902. Kappa = 2.02 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.001075. Comparing 7 points to limit.

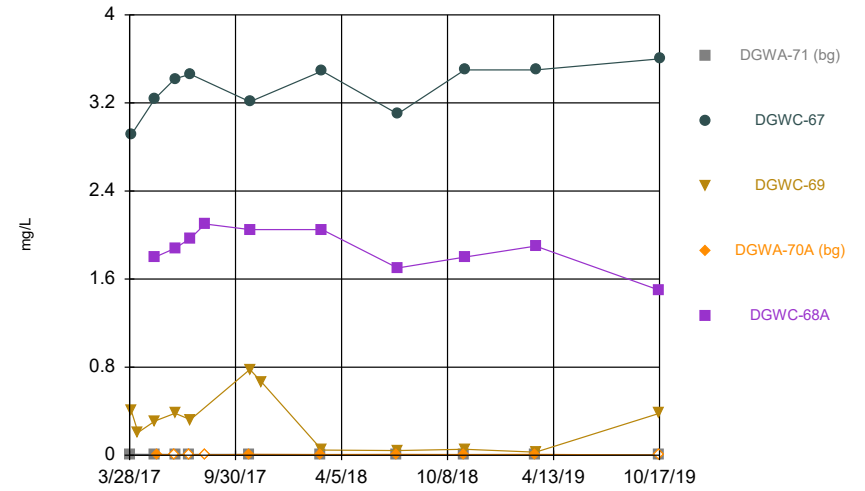
Constituent: TDS Analysis Run 2/13/2020 4:41 PM View: APPIII_AP1
McDonough Client: Golder Associates Data: McDonough Ash Pond

Time Series



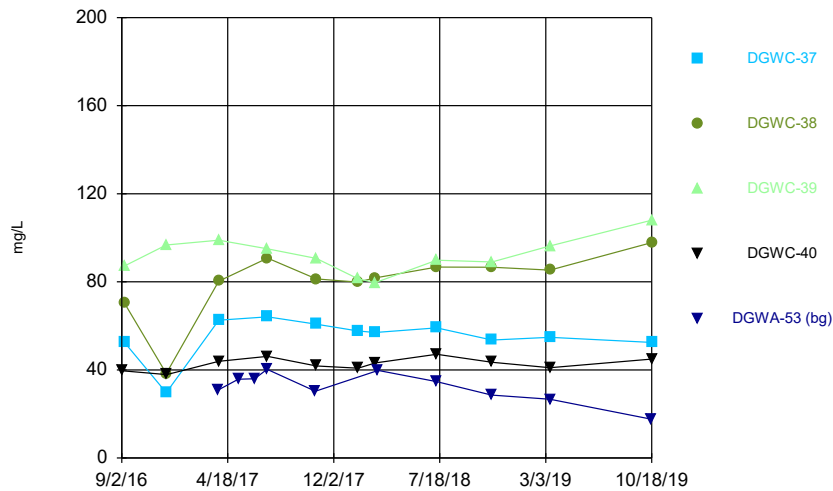
Constituent: Boron Analysis Run 2/13/2020 4:02 PM View: APPIII_AP1
McDonough Client: Golder Associates Data: McDonough Ash Pond

Time Series



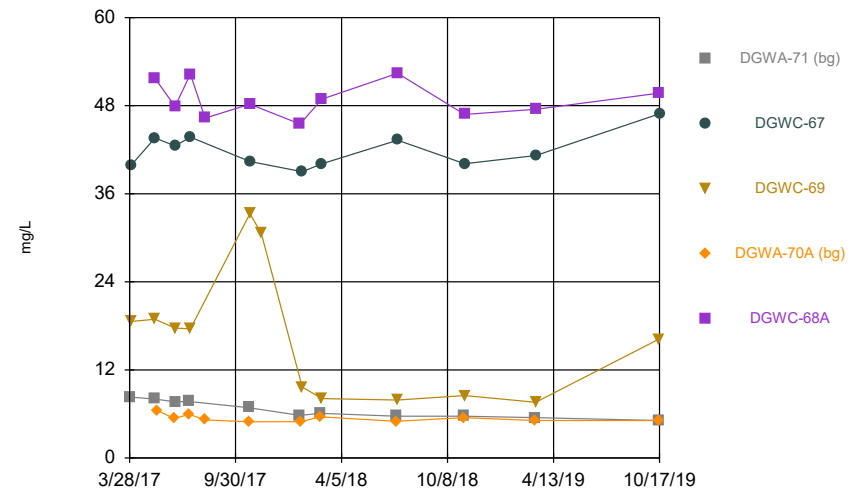
Constituent: Boron Analysis Run 2/13/2020 4:02 PM View: APPIII_AP1
McDonough Client: Golder Associates Data: McDonough Ash Pond

Time Series



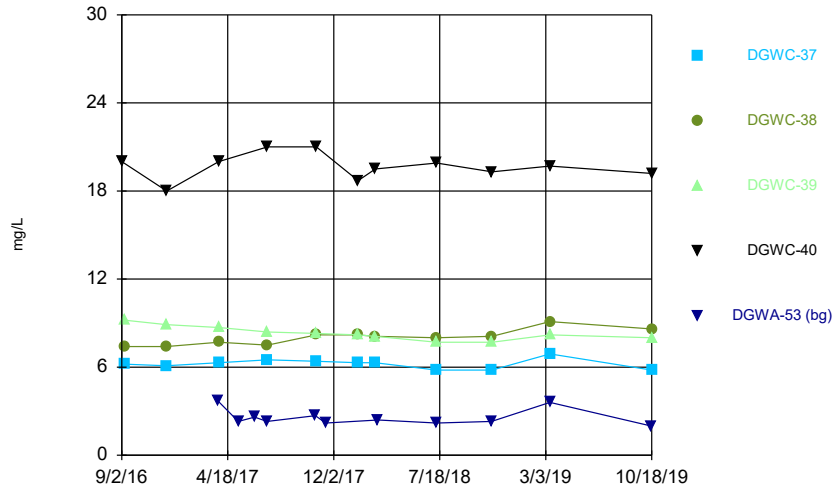
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McDonough Client: Golder Associates Data: McDonough Ash Pond

Time Series



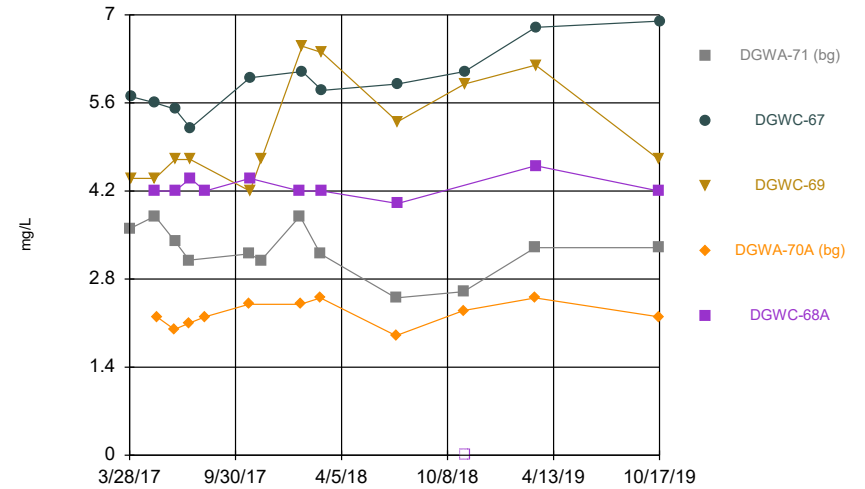
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McDonough Client: Golder Associates Data: McDonough Ash Pond

Time Series



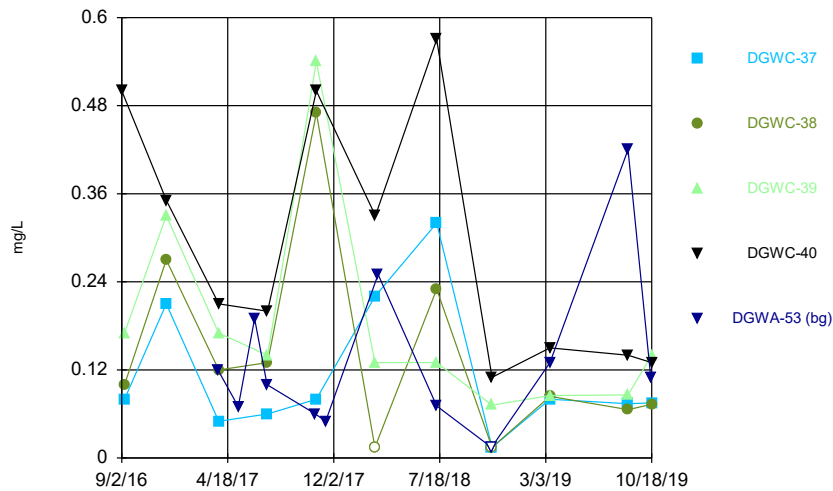
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McDonough Client: Golder Associates Data: McDonough Ash Pond

Time Series



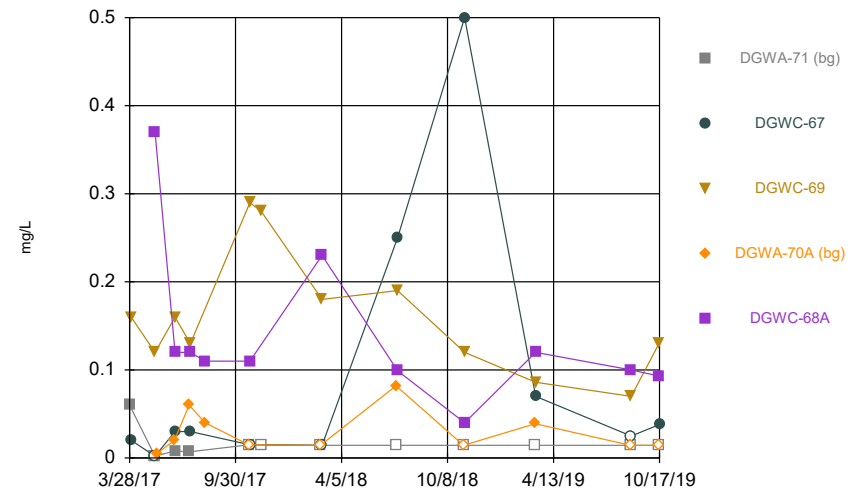
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McDonough Client: Golder Associates Data: McDonough Ash Pond

Time Series



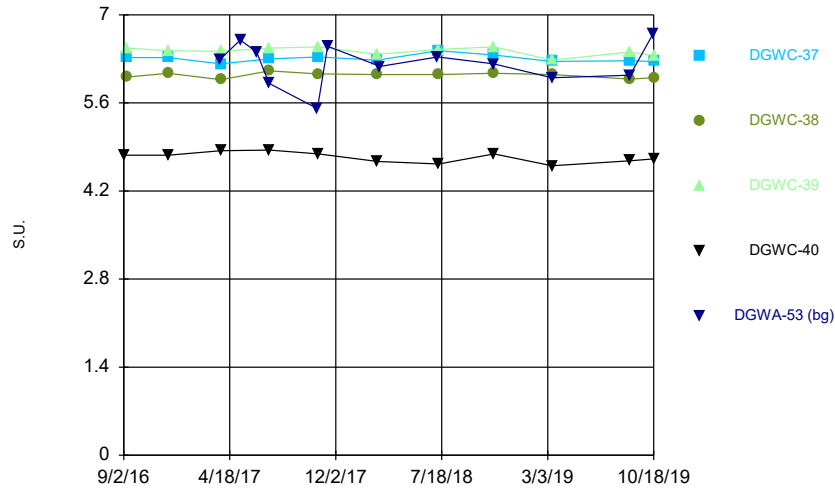
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McDonough Client: Golder Associates Data: McDonough Ash Pond

Time Series



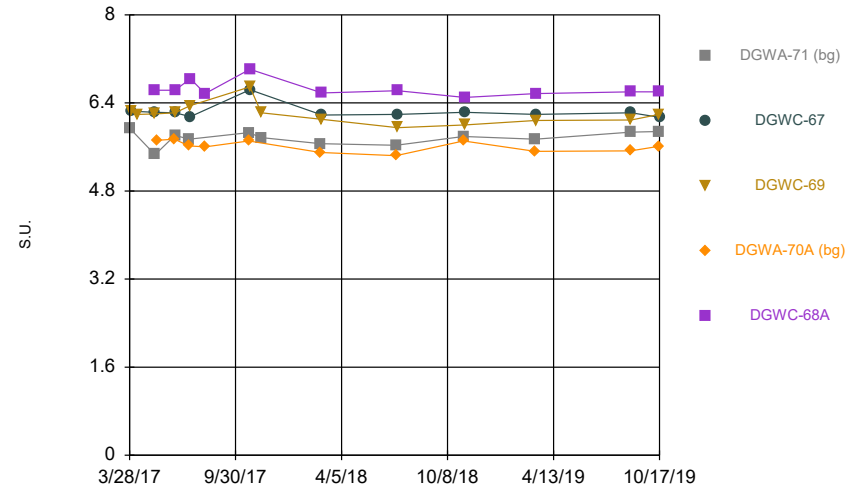
Constituent: Fluoride Analysis Run 2/13/2020 4:02 PM View: APPIII_AP1
McDonough Client: Golder Associates Data: McDonough Ash Pond

Time Series



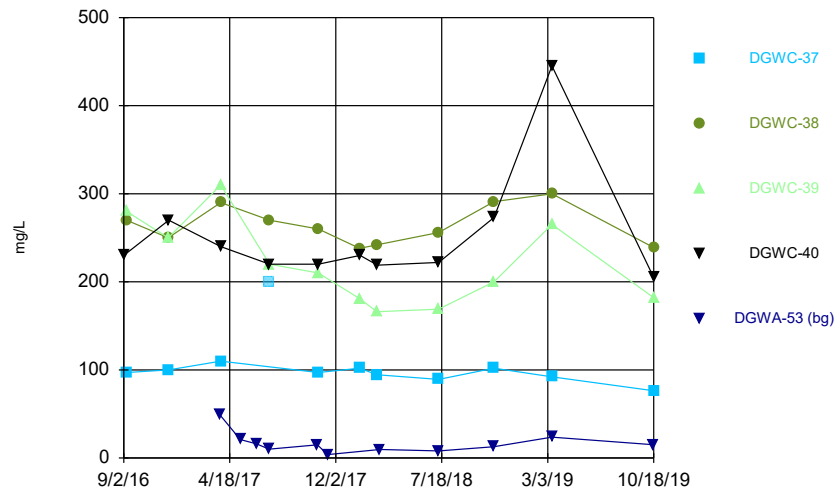
Constituent: pH [field] Analysis Run 2/13/2020 4:02 PM View: APPIII_AP1
McDonough Client: Golder Associates Data: McDonough Ash Pond

Time Series



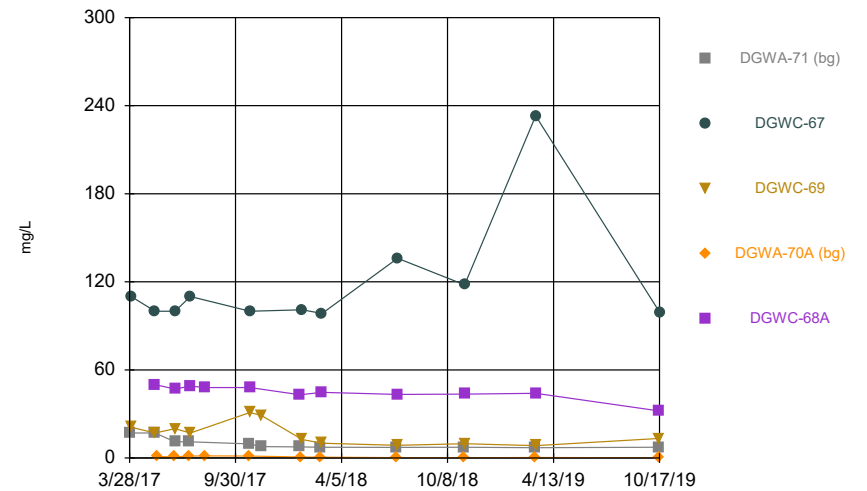
Constituent: pH [field] Analysis Run 2/13/2020 4:02 PM View: APPIII_AP1
McDonough Client: Golder Associates Data: McDonough Ash Pond

Time Series



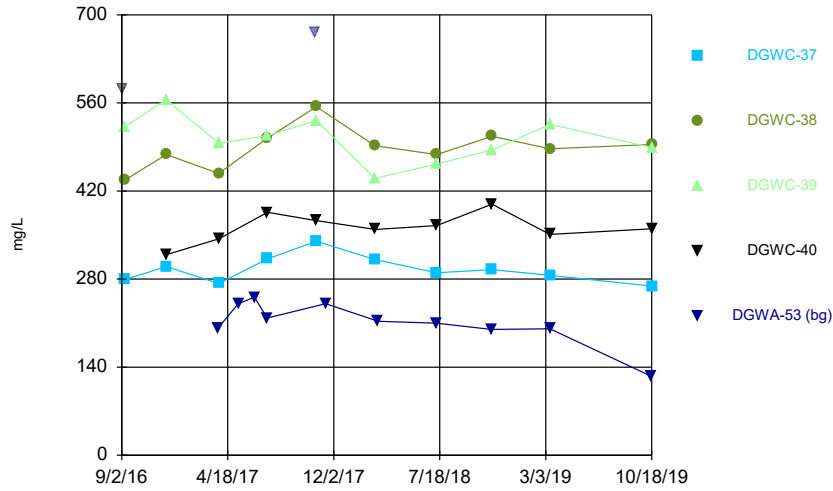
Constituent: Sulfate Analysis Run 2/13/2020 4:02 PM View: APPIII_AP1
McDonough Client: Golder Associates Data: McDonough Ash Pond

Time Series



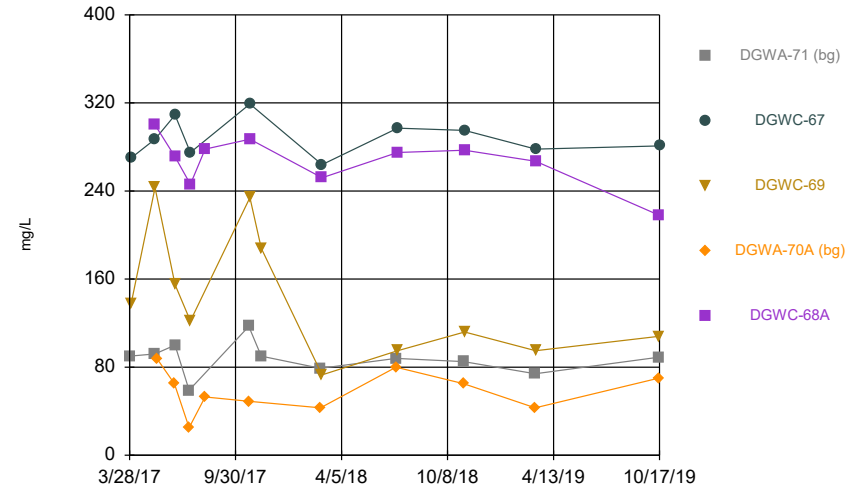
Constituent: Sulfate Analysis Run 2/13/2020 4:02 PM View: APPIII_AP1
McDonough Client: Golder Associates Data: McDonough Ash Pond

Time Series



Constituent: TDS Analysis Run 2/13/2020 4:02 PM View: APPIII_AP1
 McDonough Client: Golder Associates Data: McDonough Ash Pond

Time Series



Constituent: TDS Analysis Run 2/13/2020 4:02 PM View: APPIII_AP1
 McDonough Client: Golder Associates Data: McDonough Ash Pond

APPENDIX C

Well Installation Report

February 25, 2020

Project No. 166849618

Mr. John Benjamin Hodges

Georgia Power Company
241 Ralph McGill Boulevard, NE
Atlanta, GA 30308
JohHodge@southernco.com

**INSTALLATION REPORT FOR SURFACE IMPOUNDMENT PIEZOMETERS – GEORGIA POWER PLANT
MCDONOUGH, SMRYNA, GEORGIA**

Dear Mr. Hodges:

Golder Associates Inc. (Golder) is submitting this Piezometer Installation Report to Southern Company Services, Inc. (SCS) and Georgia Power Company (GPC), which documents the construction of piezometers at Plant McDonough in Smyrna, Georgia. Piezometer construction activities were performed in general accordance with the standards described in the *RCRA Technical Enforcement Guidance Document (1986)* and the *Georgia Water Wells Standards Act of 1985*. The installation of the piezometers was conducted under the oversight and direction of James Jones, PE and Timothy Richards, PG.

The field activities for this investigation were performed in September 2019 through December 2019. The field work consisted of the installation, development, and water level gauging of eight-teen (18) piezometers; T&PS Civil Field Services conducted a survey of the piezometers on November 7, 2019. A summary of the activities is presented below.

PIEZOMETER DRILLING AND CONSTRUCTION ACTIVITIES

Piezometers B-76, B-77, B-78, B-79, B-80, B-81, and B-82 were drilled and installed by Cascade Drilling. Piezometers B-83, B-84, B-85, B-86, B-87, B-88, B-89, B-90, B-91, B-92, and B-93 were drilled and installed by SCS. Cascade Drilling and SCS have a current and valid bond with the Water Wells Standards Advisory Council for the state of Georgia (Appendix A). The drillers' names are provided on the boring/construction diagrams presented in Appendix B.

An experienced Golder geologist was present on site to oversee and record the drilling and piezometer construction under the supervision of a professional geologist registered to practice in Georgia. Drilling methods employed for borehole advancement were sonic drilling, rotary hollow stem auger with collection of Standard Penetration Test (SPT) cores, and HQ rock coring techniques.

The drilling equipment consisted of a Rotosonic 1159, equipped with 6-inch casing, and a CME-550X drilling rig, equipped with 2.25 and 4.25-inch hollow stem augers. During the drilling, SPT core samples were logged in the field for lithologic and geotechnical properties. Rock core was collected at B-85, B-86, and B-89 using a HQ wireline coring device.

Prior to use, and between boreholes, downhole equipment was steam cleaned. The boring (lithologic) logs and piezometer construction records for the newly installed piezometers are included in Appendix B. The construction data are summarized in Table 1, and the locations of the piezometers are provided on Figure 1.

Piezometers were constructed within the borehole using factory-cleaned and sealed Schedule 40 polyvinyl chloride (PVC) products with flush-threaded fittings. Specifically, piezometers were constructed with a 10-foot section of 4-inch outer diameter (OD) and 2-inch inner diameter (ID), flush-threaded, 0.010-inch factory-slotted PVC U-pack screen, with the exception of B-68 and B87. These piezometers were installed with 2-inch PVC screen. The drillers filled the annulus of each U-pack screen section with No. 10 filter sand. In each case, the screen was placed near the bottom of the borehole, with the remainder of the piezometer being constructed from 10-foot sections of 2-inch ID, flush-threaded, PVC casing riser. A flush-threaded PVC end cap placed on the bottom of each piezometer to provide a 0.4-foot sump/sediment trap, and the top of the casing extend approximately six inches below grade. These were covered using either 8-inch round flush mount casings, or 4" stainless steel stickup casings, and a 4-foot by 4-foot by 4-inch concrete pad. The flush mount casings were secured and locked by a steel crossbar. Construction details for the piezometers are shown on the boring/piezometer construction logs in Appendix B. The PVC products used were American Society for Testing and Materials (ASTM) and National Sanitation Foundation (NSF) rated.

Following placement of the piezometer screen and casing, the annular space in each borehole adjacent to the screen was filled with U.S. Standard Sieve size No. 20-40 filter pack sand as appropriate for the formation. The filter pack sand was placed into the borehole and extends approximately 2 feet above each screen. Immediately following placement of the filter pack, the piezometers were pumped using a portable submersible pump for a minimum of one hour or until visibly clear water was discharged. If settling occurred during pumping, additional sand was placed so that the filter sand thickness was approximately 2 feet above the screen. A filter pack seal, composed of approximately 2-3 feet of hydrated time-release coated bentonite pellets, was then placed on top of the filter pack by slowly pouring the material down the borehole and tamping it into place with a tremie pipe. The bentonite was hydrated using potable water and allowed to cure prior to grouting the piezometer.

Following hydration of the bentonite, the remaining annular space was grouted with a Portland cement / bentonite mixture consisting of approximately 30% bentonite, and approximately 10 pounds per gallon, to 3 feet below ground surface using a tremie method. Each piezometer surface was completed as listed above.

PIEZOMETER DEVELOPMENT ACTIVITIES

The newly installed piezometers were developed in accordance with the Monitoring Well Development Procedures prepared by Southern Company Services, Inc. (March 2016). The piezometers were surged using a Waterra inertial pump system and/or a Reclaimer (pneumatic) pump system. During development, water quality measurements of pH, temperature, specific conductance, and turbidity were periodically collected using field-calibrated water quality equipment after the piezometer responded to improving conditions. Development activities were conducted utilizing an In-Situ SmarTroll and a Lamotte 2020we turbidimeter for monitoring water quality measurements. Piezometer development and SmarTroll forms are included in Appendix B and summarized on Table 2. As presented on the development forms, development water volumes removed ranged between 14 gallons and 313 gallons. During development, attempts were made for each piezometer to achieve a turbidity value below 10 nephelometric turbidity units (NTUs).

A full round of water levels for the newly installed and developed piezometers was collected on between January 13, 2020 and January 14, 2020 (Table 3). The measurements were collected using a decontaminated electronic

water level indicator. The surveyed point on the top of the casing was used as reference, and the measurements were recorded to within 0.01 foot.

PIEZOMETER SURVEY

The newly installed piezometers were surveyed on November 7, 2019, by T&PS Civil Field Services. The survey was completed using LEICA GS14 Antenna and CS15 Sensor with a positional tolerance of 0.10'H:V. Surveyed locations and elevations are presented on the boring/construction diagrams, and a site map showing the locations of the newly installed piezometers is presented in Figure 1.

CLOSING

We appreciate the opportunity to assist SCS and GPC with this project. Should you have any questions or require additional information, please contact the undersigned at (770) 496-1893.

Sincerely,

Golder Associates Inc.



Brian Steele, PG
Senior Project Geologist



Tim Richards, PG
Associate & Senior Consultant



BS/TIR/kld

Attachments:

- Figure 1: Monitoring Well/Piezometer Location Map
- Table 1: Piezometer Installation Summary
- Table 2: Summary of Piezometer Development Data
- Table 3: Summary of Post-Development Water Level and Survey Data
- Appendix A: Drilling Bonds
- Appendix B: Boring Logs/Construction Diagrams and Development Forms

Figure



LEGEND

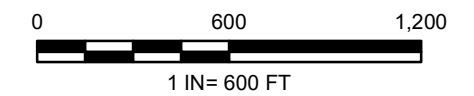
- PIEZOMETER
- PERMIT BOUNDARY
- PROPERTY BOUNDARY

NOTES

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.

REFERENCE

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



CLIENT
 GEORGIA POWER COMPANY
 PLANT MCDONOUGH
 PROJECT
 FIELD SAMPLING PLAN

TITLE
PLANT MCDONOUGH MONITORING WELL AND PIEZOMETER LOCATIONS - AP-1 AND AP-2, 3/4

CONSULTANT	YYYY-MM-DD	2020-02-13
	PREPARED	SEB
	DESIGN	SEB
	REVIEW	--
	APPROVED	--

PROJECT No.
 166849618

Rev.
 0

FIGURE
 2

Tables

TABLE 1
Piezometer Installation Summary
Georgia Power Company - Plant McDonough
Atlanta, GA

Piezometer	Monitoring Well Designation	Driller	Date Well Started	Date Well Completed	Drill Method	Drill Depth (feet-bgs)	Total Well Depth (feet-bgs)	Well Screen Interval (feet-bgs)	Depth to Top of Sand Pack (feet-bgs)	Depth to Top of Annular Seal (feet-bgs)
B-72	B-72	SCS	4/19/2017	4/19/2017	Geoprobe 7822DT	21.9	21.9	11.5 - 21.5	9.8	7.7
B-73	B-73	SCS	4/19/2017	4/19/2017	Geoprobe 7822DT	15.8	15.8	5.4 - 15.4	3.2	0.5
B-74	B-74	SCS	4/24/2017	4/25/2017	Geoprobe 7822DT	16.5	16.2	10.8 - 15.8	9.0	4.8
B-76	B-76	Cascade Drilling	9/16/2019	9/16/2019	Rotosonic 1159	38.5	38.5	28.5 - 38.5	26.5	17.0
B-77	B-77	Cascade Drilling	9/17/2019	9/17/2019	Rotosonic 1159	42.0	42.0	32 - 42	30.0	22.0
B-78	B-78	Cascade Drilling	9/22/2019	9/22/2019	Rotosonic 1159	30.0	30.0	19.5 - 29.5	17.5	9.0
B-79	B-79	Cascade Drilling	9/20/2019	9/21/2019	Rotosonic 1159	35.0	34.93	24.43 - 34.43	22.0	14.0
B-80	B-80	Cascade Drilling	9/20/2019	9/20/2019	Rotosonic 1159	30.0	30.0	19.5 - 29.5	17.5	9.0
B-81	B-81	Cascade Drilling	9/20/2019	9/22/2019	Rotosonic 1159	50.0	50.0	39.67 - 49.67	37.0	17.0
B-82	B-82	Cascade Drilling	9/21/2019	9/21/2019	Rotosonic 1159	45.0	45.0	34.5 - 44.5	32.5	26.5
B-83	B-83	SCS	9/30/2019	9/30/2009	CME550X	50	50	38.6 - 48.6	36.6	30.7
B-84	B-84	SCS	10/1/2019	10/1/2019	CME550X	50	49.5	39.1 - 49.1	36.0	30.6
B-85	B-85	SCS	11/17/2019	11/18/2019	CME550X	34.5	34.5	24.2 - 34.2	21.6	16.6
B-86	B-86	SCS	11/18/1819	11/18/2020	CME550X	34.1	34.1	24.1 - 34.1	22.1	17.0
B-87	B-87	SCS	11/17/2019	11/17/2019	CME550X	42.0	42	31.7 - 41.7	29.2	24.0
B-88	B-88	SCS	11/15/2019	11/15/2019	CME550X	72.4	72.4	62 - 72	60.0	55.0
B-89	B-89	SCS	11/19/2019	11/19/2019	CME550X	49.5	49.5	35.5 - 49.5	33.5	28.5
B-90	B-90	SCS	12/10/2019	12/10/2019	CME550X	33.4	33.4	23.4 - 33.4	21.4	15.4
B-91	B-91	SCS	12/11/2019	12/11/2019	CME550X	35	35	24.6 - 34.6	22.8	17.5
B-92	B-92	SCS	12/11/2019	12/11/2019	CME550X	25.0	25	14.6 - 24.6	12.5	7.5
B-93	B-93	SCS	12/12/2019	12/12/2019	CME550X	29.2	29.2	18.9 - 28.9	16.9	11.9

NOTES:

bgs = below ground surface; SCS = Southern Company Services

TABLE 2
Summary of Piezometer Development Data
Georgia Power Company - Plant McDonough
Atlanta, GA

Piezometer	Monitoring Well Designation	Date Started	Time Started (hr:min)	Date Completed	Elapsed Time (hr:min)	Development Method	Measured Depth of Well (feet bgs)	Initial Water Level (feet btoc)	Final Water Level (feet btoc)	Volume of Casing (gal)	Total Volume Removed (gal)	pH (SU)	Specific Cond (mS/cm)	Temp (°C)	Turb (NTU)	ORP (mv)	DO (mg/L)
B-72	B-72	5/2/2017	10:04	5/3/2017	14:57	Surging / Pumping	22.2	2.01	2.95	3.10	1074	6.06	0.390	21.60	8.53	42.43	0.66
B-73	B-73	4/26/2017	12:45	4/28/2017	8:57	Surging / Pumping	16.0	4.11	10.66	1.90	113	6.35	0.371	17.40	4.38	89.34	1.92
B-74	B-74	4/28/2017	9:36	4/28/2017	7:48	Surging / Pumping	16.3	3.61	10.42	2.10	76	6.09	0.263	15.70	3.33	55.09	0.27
B-76	B-76	9/17/2019	17:27	9/18/2019	5:54	Surging / Pumping	38.5	18.3	25.4	3.37	59	5.03	1.128	24.47	9.97	125.12	0.56
B-77	B-77	9/18/2019	10:05	9/18/2019	3:40	Surging / Pumping	43.4	32.58	39.62	1.81	14	NA	NA	NA	NA	NA	NA
B-78	B-78	9/23/2019	9:50	9/23/2019	1:54	Surging / Pumping	31.7	9.2	9.9	3.76	85	4.90	1.125	19.73	1.37	322.73	0.31
B-79	B-79	9/21/2019	15:50	9/21/2019	3:05	Surging / Pumping	36.7	5.35	7.71	5.23	61	5.46	1.149	20.78	9.90	NA	NA
B-80	B-80	9/20/2019	13:06	9/20/2019	3:14	Surging / Pumping	30.4	14.8	18.6	2.61	46	5.64	1.290	20.71	2.16	76.9	1.20
B-81	B-81	9/21/2019	9:47	9/21/2019	3:13	Surging / Pumping	50.5	28.9	36.2	3.59	38	6.07	0.750	23.05	5.51	65.8	3.89
B-82	B-82	9/23/2019	11:25	9/23/2019	1:45	Surging / Pumping	49.6	14.66	15.51	5.83	170	6.42	0.557	25.54	11.90	NA	NA
B-83	B-83	10/3/2019	10:15	10/4/2019	11:45	Surging / Pumping	48.8	32.40	32.60	2.75	95	5.53	0.378	24.94	8.82	58.71	0.19
B-84	B-84	10/4/2019	10:45	10/4/2019	5:45	Surging / Pumping	49.4	32.95	39.00	2.75	40	5.85	0.695	24.01	9.58	62.8	0.5
B-85	B-85	11/20/2019	10:30	11/20/2019	6:16	Surging / Pumping	27.7	6.4	3.1	3.55	127	5.38	1.167	18.39	4.83	34.0	0.12
B-86	B-86	11/20/2019	9:57	11/20/2019	5:05	Surging / Pumping	35.8	4.5	5.4	5.23	317	5.42	1.122	18.75	4.38	76.1	0.49
B-87	B-87	11/21/2019	10:25	11/21/2019	3:00	Surging / Pumping	45.0	16.51	34.59	4.76	150	5.86	2.020	17.49	20.10	NA	NA
B-88	B-88	11/21/2019	10:30	11/21/2019	5:45	Surging / Pumping	75.1	32.7	33.0	7.08	286	5.55	1.320	17.72	3.27	69.4	0.41
B-89	B-89	11/22/2019	9:10	11/22/2019	3:03	Surging / Pumping	48.9	23.2	24.0	4.29	183	5.73	0.457	20.14	0.38	51.5	2.44
B-90	B-90	12/14/2019	8:00	12/14/2019	4:45	Surging / Pumping	33.0	1.2	11.1	5.31	137	5.63	1.207	18.34	4.29	86.5	0.45
B-91	B-91	12/15/2019	12:17	12/15/2019	4:35	Surging / Pumping	35.2	3.4	11.1	5.32	313	5.30	1.175	18.40	6.38	124.3	0.68
B-92	B-92	12/16/2019	14:39	12/16/2019	1:05	Surging / Pumping	24.8	4.6	9.2	3.38	162	4.88	0.971	18.53	4.02	341.1	0.58
B-93	B-93	12/16/2019	14:58	12/17/2019	6:59	Surging / Pumping	29.3	6.85	15.10	3.75	33	5.75	1.149	17.92	3.07	NA	NA

NOTES:

hr:min - hours:minutes; bgs - below ground surface; btoc - below top of casing; gal - gallons; SU - Standard Units; mS/cm - millisiemens per centimeter; °C - degrees Celsius; NTU - nephelometric turbidity units; mv - millivolts; mg/L - milligrams per liter; Cond - conductivity; Temp - temperature; Turb - turbidity; ORP - oxygen reduction potential; DO - dissolved oxygen; NA - not available

TABLE 3
Summary of Post Development Water Level and Survey Data
Georgia Power Company - Plant McDonough
Atlanta, GA

Piezometer	Monitoring Well Designation	Survey Date	Water Level Date	Water Level	Water Elevation	NAD 83 Northing	NAD 83 Easting	Latitude	Longitude	Elevation Top of Casing	Ground Surface Elevation
				(feet BTOC)	(feet MSL)	(feet)	(feet)	(dd)	(dd)	(feet MSL)	(feet MSL)
B-72	B-72	5/15/2017	5/4/2017	2.78	756.07	1391242.15	2200723.92	33.824208	-84.4823130	758.85	758.63
B-73	B-73	5/15/2017	5/2/2017	4.15	755.31	1391352.40	2200697.45	33.824511	-84.4824020	759.46	759.20
B-74	B-74	5/15/2017	5/3/2017	3.7	755.71	1391279.82	2200665.34	33.8243110	-84.4825070	759.44	759.38
B-76	B-76	11/7/2019	1/14/2020	13.91	746.40	1390716.87	2202755.99	33.8227814	-84.4756169	760.31	760.54
B-77	B-77	11/7/2019	1/13/2020	28.5	748.25	1390949.76	2202941.41	33.8234230	-84.4750087	776.75	777.06
B-78	B-78	11/7/2019	1/13/2020	9.05	781.60	1394327.62	2202958.92	33.8327061	-84.4749843	790.65	787.31
B-79	B-79	11/7/2019	1/13/2020	5.92	782.63	1394458.16	2203223.80	33.8330670	-84.4741134	788.55	785.50
B-80	B-80	11/7/2019	1/13/2020	16.48	787.97	1394373.86	2203534.26	33.8328379	-84.4730901	804.45	801.52
B-81	B-81	11/7/2019	1/13/2020	31.39	789.12	1394366.17	2203741.53	33.8328185	-84.4724075	820.51	816.75
B-82	B-82	11/7/2019	1/13/2020	8.9	801.08	1393750.42	2204256.96	33.8311305	-84.4707042	809.98	807.15
B-83	B-83	11/7/2019	1/13/2020	28.75	748.14	1390736.31	2202695.17	33.8228343	-84.4758174	776.89	777.05
B-84	B-84	11/7/2019	1/14/2020	30.12	746.12	1390411.65	2202242.51	33.8219384	-84.4773046	776.24	776.27
B-85	B-85	11/7/2019	1/13/2020	2.27	780.40	1394433.14	2203135.02	33.8329975	-84.4744055	782.67	782.80
B-86	B-86	11/7/2019	1/13/2020	0.91	783.49	1394479.84	2203207.19	33.8331265	-84.4741683	784.40	784.50
B-87	B-87	11/7/2019	1/13/2020	15.56	787.98	1394401.16	2203531.64	33.8329129	-84.4730990	803.54	800.40
B-88	B-88	11/7/2019	1/13/2020	31.47	788.64	1394400.23	2203738.46	33.8329120	-84.4724180	820.11	816.60
B-89	B-89	11/7/2019	1/13/2020	21.78	800.72	1394399.07	2204048.84	33.8329114	-84.4713958	822.50	822.50
B-90	B-90	11/7/2019	1/14/2020	0.88	783.30	1394500.73	2203212.95	33.8331839	-84.4741495	784.18	784.20
B-91	B-91	11/7/2019	1/14/2020	2.90	780.17	1394447.87	2203124.30	33.8330379	-84.4744409	783.07	783.10
B-92	B-92	11/7/2019	1/14/2020	3.88	781.34	1394393.54	2203026.60	33.8328878	-84.4747621	785.22	785.30
B-93	B-93	11/7/2019	1/14/2020	4.86	784.28	1394348.37	2202947.29	33.8327630	-84.4750228	789.14	789.20

NOTES:

BTOC = below top of casing; MSL = mean sea level; NAD = North American Datum; dd = decimal degrees

Survey data collected by T&PS Civil Field Services, November 7, 2019; Georgia NAD83 West Zone

APPENDIX A

Drilling Bond

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:

CONTINUATION CERTIFICATE

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

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

Westchester Fire Insurance Company

By: Katie J

Katie Snider, Attorney-in-Fact

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

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

Power of Attorney

WESTCHESTER FIRE INSURANCE COMPANY

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

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

- (1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.
- (2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such persons written appointment as such attorney-in-fact.
- (3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- (4) Each of the Chairman, the President and Vice Presidents of the Company in hereby authorized, for and on behalf of the Company, to delegate in writing any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company's seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- (5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

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

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

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

WESTCHESTER FIRE INSURANCE COMPANY



Stephen M. Haney
Stephen M. Haney, Vice President

COMMONWEALTH OF PENNSYLVANIA
COUNTY OF PHILADELPHIA ss.

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

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



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

Karen E. Brandt
Notary Public

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

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



William L. Kelly
William L. Kelly, Assistant Secretary

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



CONTINUATION
CERTIFICATE

SAFECO Insurance Company of America

, Surety upon

a certain Bond No. 4993104

dated effective June 30, 1987
(MONTH-DAY-YEAR)

on behalf of Southern Company Services, Inc.
(PRINCIPAL)

and in favor of Georgia - Dept. of Natural Resources
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on June 30, 2016
(MONTH-DAY-YEAR)

and ending on June 30, 2017
(MONTH-DAY-YEAR)

Amount of bond \$10,000.00

Description of bond Water Well Contractors & Drillers

PROVIDED: That this continuation certificate does not create a new obligation and is executed upon the express condition and provision that the Surety's liability under said bond and this and all Continuation Certificates issued in connection therewith shall not be cumulative and that the said Surety's aggregate liability under said bond and this and all such Continuation Certificates on account of all defaults committed during the period (regardless of the number of years) said bond had been and shall be in force, shall not in any event exceed the amount of said bond as hereinbefore set forth.

Signed and dated on April 07, 2016
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

By 

D-Ann Kleidosty, Attorney-in-Fact

THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 7310252

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

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Brooke A. Sharp; Christine Doczy; D-Ann Kleidosty; Gary D. Eklund; Sharon J. Potts; Sylvia M. Ogle; William G. Moody

all of the city of Atlanta, state of GA each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 1st day of April, 2016.



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

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

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

STATE OF PENNSYLVANIA ss
COUNTY OF MONTGOMERY

On this 1st day of April, 2016, before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Plymouth Meeting, Pennsylvania, on the day and year first above written.



COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Plymouth Twp., Montgomery County
My Commission Expires March 28, 2017
Member, Pennsylvania Association of Notaries

By: Teresa Pastella
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

ARTICLE IV - OFFICERS - Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

Certificate of Designation - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization - By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Gregory W. Davenport, the undersigned, Assistant Secretary, of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 7th day of April, 2016.



By: Gregory W. Davenport
Gregory W. Davenport, Assistant Secretary

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

CONTINUATION
CERTIFICATE

SAFECO Insurance Company of America

, Surety upon

a certain Bond No. 4993104

dated effective June 30, 1987
(MONTH-DAY-YEAR)

on behalf of Southern Company Services, Inc.
(PRINCIPAL)

and in favor of Georgia - Dept. of Natural Resources
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on June 30, 2016
(MONTH-DAY-YEAR)

and ending on June 30, 2017
(MONTH-DAY-YEAR)

Amount of bond \$10,000.00

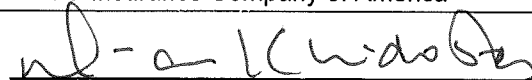
Description of bond Water Well Contractors & Drillers

PROVIDED: That this continuation certificate does not create a new obligation and is executed upon the express condition and provision that the Surety's liability under said bond and this and all Continuation Certificates issued in connection therewith shall not be cumulative and that the said Surety's aggregate liability under said bond and this and all such Continuation Certificates on account of all defaults committed during the period (regardless of the number of years) said bond had been and shall be in force, shall not in any event exceed the amount of said bond as hereinbefore set forth.

Signed and dated on April 07, 2016
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

By



D-Ann Kleidosty, Attorney-in-Fact

THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.

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Certificate No. 7310252

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

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Brooke A. Sharp; Christine Doczy; D-Ann Kleidosty; Gary D. Eklund; Sharon J. Potts; Sylvia M. Ogle; William G. Moody

all of the city of Atlanta, state of GA each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 1st day of April, 2016.



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

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

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

STATE OF PENNSYLVANIA ss
COUNTY OF MONTGOMERY

On this 1st day of April, 2016, before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Plymouth Meeting, Pennsylvania, on the day and year first above written.



COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Plymouth Twp., Montgomery County
My Commission Expires March 28, 2017
Member, Pennsylvania Association of Notaries

By: Teresa Pastella
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

ARTICLE IV - OFFICERS - Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

Certificate of Designation - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

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I, Gregory W. Davenport, the undersigned, Assistant Secretary, of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 7th day of April, 2016.



By: Gregory W. Davenport
Gregory W. Davenport, Assistant Secretary

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

GENERAL PURPOSE RIDER

To be attached to and form part of Bond Number 09157828 effective June 30, 2015 issued by the Fidelity and Deposit Company of Maryland in the amount of Twenty Thousand and No/100 (\$20,000.00), on behalf of Craig Penton dba Terracon Consultants, Inc. as Principal, and in favor of Director of the Environmental Protection Division, Department of Natural Resources, State of Georgia as Obligee:

NOW Therefore, it is agreed that:

The expiration date of the bond is hereby amended to:

June 30, 2017

It is further understood and agreed that all other terms and conditions of this bond shall remain unchanged.

This rider is to be effective the 30th day of June , 2015 .

Signed, sealed and dated this 4th day of November , 2015 .

Craig Penton dba Terracon Consultants, Inc.
Principal

Fidelity and Deposit Company of Maryland
Surety

Christy M. Braile, Attorney-in-Fact

6/4/14 sent to
Craig Penton
(Stacy Adams)

FOR YOUR RECORDS

Bond Number 09157828

Performance Bond For Water Well Contractors And Drillers

Name of Water Well Contractor or Driller Craig Penton dba Terracon Consultants, Inc.

Know All Men By These Present

That we Craig Penton dba Terracon Consultants, Inc. AND ANY AND ALL EMPLOYEES, OFFICERS AND PARTNERS, as Principal, and Fidelity and Deposit Company of Maryland as Surety, are held and firmly bound unto the Director of the Environmental Protection Division (Director), Department of Natural Resources, State of Georgia and his or her Successor or Successors in office, as Obligee, in the full sum of **TWENTY THOUSAND AND NO/00 DOLLARS (\$20,000.00)** for the payment of which will and truly to be made, we bind ourselves, our heir, administrators, successors and assigns, jointly and severally, by the present.

WHEREAS, the WATER WELL STANDARDS ACT OF 1985 (Ga. Laws 1985, p. 1192) (the "ACT") requires that water well contractors and drillers file performance bonds with the director to ensure compliance with the ACT; and WHEREAS the above bound PRINCIPAL is subject to the terms and provisions of said ACT. NOW, THEREFORE, the conditions of this obligation are such that if the above bound PRINCIPAL shall fully and faithfully perform the duties and in all things comply with the procedures and standards set forth in the ACT as now and hereafter amended, and the rules and regulations promulgated pursuant thereto, including but not limited to the correction of any violation of such procedures and standards upon discovery, irrespective of whether such discovery is made before completion of any well subject to this bond, then this obligation shall be void; otherwise of full force and effect.

And Surety, for value received, agrees that no amendment to existing laws, rules or regulations, or adoption of new laws, rules or regulations shall in anyway discharge its obligation on this bond, and does hereby waive notice of any such amendment, adoption or modification.

This bond shall be effective from date of issuance and shall continue in effect until terminated by expiration, mutual agreement or cancellation upon sixty (60) days written notice to Principal and Obligee; provided that the rights of the obligee and beneficiaries under this bond which arose prior to such termination shall continue.

The bond is effective June 4, 2014 and unless sooner terminated, this bond shall terminate June 30, 2015. In Witness Thereof the Principal and Surety have caused these present to be duly signed and sealed, this 4th day of, June 2014.

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

SURETY BY: Christy M. McCart, Attorney-in-Fact

GEORGIA REGISTERED AGENT N/A SEAL:

Revised December 2012

APPENDIX B

Boring Logs/Construction Diagrams and Development Forms

RECORD OF BOREHOLE B-72

SHEET 1 of 1

PROJECT: SCS-Plant McDonough
 PROJECT NUMBER: 1779172
 DRILLED DEPTH: 21.90 ft
 LOCATION: ~50' SSE of B-68

DRILL RIG: Geoprobe 7822DT
 DATE STARTED: 4/19/17
 DATE COMPLETED: 4/19/17

NORTHING: 1,391,242.15
 EASTING: 220,723.92
 GS ELEVATION: 758.09
 TOC ELEVATION: 758.85 ft

DEPTH W.L.: 2.90
 DATE W.L.: 5/2/2017
 TIME W.L.: 09:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES				MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS		
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop			N-VALUE	REC
0		0.00 - 5.00 ML, SILT, with trace fine sand and gravels (rock fragments), low plasticity; brown; cohesive, moist, w<PL, soft.	ML		753.09 5.00						<p>8" Diameter Round Flush Mount</p> <p>Pure Gold Grout Mixture</p> <p>Pel-Plug 3/8" Bentonite Pellets</p> <p>FilterSil gravel pack</p> <p>Pre-pack 0.010" Slotted Schedule PVC</p>	<p>WELL CASING Interval: 0' - 21.9' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw</p> <p>SURFACE CASING Interval: Material: Diameter:</p> <p>WELL SCREEN Interval: 11.5' - 21.5' Material: Schedule 40 PVC Pre-Pack Diameter: 2" Slot Size: 0.010" End Cap: 21.5' - 21.9'</p> <p>FILTER PACK Interval: 9.8' - 21.9' Type: FilterSil gravel pack</p> <p>FILTER PACK SEAL Interval: 7.7' - 9.8' Type: Pel-Plug 3/8" Bentonite Pellets</p> <p>ANNULUS SEAL Interval: 0' - 7.7' Type: Pure Gold Grout Mixture</p> <p>WELL COMPLETION Pad: 4' x 4' concrete Protective Casing: 8" Diameter Round Flush Mount</p> <p>DRILLING METHODS Soil Drill: 4.25-inch ID HSA Rock Drill: N/A</p> <p>NOTES</p>
5		5.00 - 13.50 SP-SM, Poorly-graded SAND with Silt, fine, low plasticity; red-orange brown, relic structure, highly micaceous; cohesive, wet, w<PL, very soft.	SP-SM		744.59 13.50	S1	OD	25-50/3	50/3	0.75 1.50		
15		13.50 - 18.50 SM, Silty SAND with trace fine gravels, non-plastic to low plasticity; dark brown to dark gray, highly micaceous; non-cohesive, dry to moist, w<PL, compact.	SM		739.59 18.50	S2	OD	17-34-8	42	1.50 1.50		
20		18.50 - 21.50 ML, SILT, with trace sand and large gravels, low plasticity; brown to dark gray black, saprolitic, highly micaceous, gneiss; cohesive, wet, w<PL, soft to firm.	ML		736.59 21.50							
21.90		Boring completed at 21.90 ft										

BOREHOLE RECORD 1779172.GPJ PIEDMONT.GDT 5/18/17

LOG SCALE: 1 in = 5 ft
 DRILLING COMPANY: Southern Company Services
 DRILLER: S. Milam

GA INSPECTOR: Michael Boatman PG
 CHECKED BY: Rachel Kirkman, PG
 DATE: 5/17/17



RECORD OF BOREHOLE B-73

SHEET 1 of 1

PROJECT: SCS-Plant McDonough
 PROJECT NUMBER: 1779172
 DRILLED DEPTH: 15.80 ft
 LOCATION: ~50' NNW of B-68

DRILL RIG: Geoprobe 7822DT
 DATE STARTED: 4/19/17
 DATE COMPLETED: 4/19/17

NORTHING: 1,391,352.40
 EASTING: 2,200,697.45
 GS ELEVATION: 758.85
 TOC ELEVATION: 759.46 ft

DEPTH W.L.: 4.11
 DATE W.L.: 4/26/2017
 TIME W.L.: 12:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES				MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop			N-VALUE
0	755	0.00 - 8.50 SP-SM, Poorly-graded SAND with Silt, non-plastic; red-orange brown; non-chesive, dry to moist, w<PL, loose.	SP-SM	[Graphic Log: Dotted pattern]						8" Diameter Round Flush Mount Pure Gold Grout Mixture Pel-Plug 3/8" Bentonite Pellets Pre-pack 0.010" Slotted Schedule PVC FilterSil gravel pack	WELL CASING Interval: 0' - 15.8' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw SURFACE CASING Interval: Material: Diameter: WELL SCREEN Interval: 5.4' - 15.4' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 15.4' - 15.8' FILTER PACK Interval: 3.2' - 15.8' Type: FilterSil FILTER PACK SEAL Interval: 0.5' - 3.2' Type: Pel-Plug 3/8" Bentonite Pellets ANNULUS SEAL Interval: 0 - 0.5' Type: Pure Gold Grout Mixture WELL COMPLETION Pad: 4' x 4' concrete Protective Casing: 8" Diameter Round Flush Mount DRILLING METHODS Soil Drill: 4.25-inch ID HSA Rock Drill: N/A NOTES
750	750	8.50 - 9.50 CL, CLAY, with some silt, low plasticity; red brown; cohesive, moist, w<PL, soft.	CL	[Graphic Log: Diagonal lines]	S1	OD	1-8-15	23	1.50 1.50		
745	745	9.50 - 15.50 SP-SM, Poorly-graded SAND with Silt, non-plastic to low plasticity; white to dark gray, Saprolitic; non-chesive, dry to moist, w<PL, compact to dense.	SP-SM	[Graphic Log: Dotted pattern]							
15	743.35	Boring completed at 15.80 ft			S2	OD	12-29-35	64	1.50 1.50		
15.80	743.35										
740	740										
20	735										
25	730										
30	725										
35	720										
40	720										

BOREHOLE RECORD 1779172.GPJ PIEDMONT.GDT 5/18/17

LOG SCALE: 1 in = 5 ft
 DRILLING COMPANY: Southern Company Services
 DRILLER: S. Milam

GA INSPECTOR: Michael Boatman PG
 CHECKED BY: Rachel Kirkman, PG
 DATE: 5/17/17



RECORD OF BOREHOLE B-74

SHEET 1 of 1

PROJECT: SCS-Plant McDonough
 PROJECT NUMBER: 1779172
 DRILLED DEPTH: 16.50 ft
 LOCATION: ~50' West of B-68

DRILL RIG: Geoprobe 7822DT
 DATE STARTED: 4/24/17
 DATE COMPLETED: 4/25/17

NORTHING: 1,391,279.82
 EASTING: 2,200,665.34
 GS ELEVATION: 758.96
 TOC ELEVATION: 759.44 ft

DEPTH W.L.: 3.3'
 DATE W.L.: 4/25/2017
 TIME W.L.: 09:37

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES				MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS		
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop			N-VALUE	REC
0		0.00 - 4.00 CL, CLAY, with some silt, low plasticity; red brown, fill; cohesive, moist, w<PL, soft.	CL		754.96 4.00						<p>8" Diameter Round Flush Mount Pure Gold Grout Mixture Pel-Plug 3/8" Bentonite Pellets FilterSil gravel pack Pre-pack 0.010" Slotted Schedule 40 PVC</p>	<p>WELL CASING Interval: 0' - 16.2' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw</p> <p>SURFACE CASING Interval: Material: Diameter:</p> <p>WELL SCREEN Interval: 10.8' - 15.8' Material: Pre-pack Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 15.8' - 16.2'</p> <p>FILTER PACK Interval: 9.0' - 16.5' Type: FilterSil gravel pack</p> <p>FILTER PACK SEAL Interval: 4.8' - 9.0' Type: Pel-Plug 3/8" Bentonite Pellets</p> <p>ANNULUS SEAL Interval: 0' - 4.8' Type: Pure Gold Grout Mixture</p> <p>WELL COMPLETION Pad: 4' x 4' concrete Protective Casing: 8" Diameter Round Flush Mount</p> <p>DRILLING METHODS Soil Drill: 4.25-inch ID HSA Rock Drill: N/A</p> <p>NOTES N/A</p>
5		4.00 - 13.50 SP-SM, Poorly-graded SAND with Silt and trace gravel, fine to coarse, non-plastic; white to tan, deeply weathered, granitic; non-cohesive, moist, w<PL, loose/soft.	SP-SM			S1	OD	3-18-20	38	0.75 1.50		
10												
15		13.50 - 16.50 SM, Silty SAND, non-plastic; white to light gray; non-cohesive, dry to moist, w<PL, dense.	SM		745.46 13.50	S2	OD	50/3	50/3	0.25 1.50		
		Boring completed at 16.50 ft			742.46							
20												
25												
30												
35												
40												

BOREHOLE RECORD 1779172.GPJ PIEDMONT.GDT 5/18/17

LOG SCALE: 1 in = 5 ft
 DRILLING COMPANY: Southern Company Services
 DRILLER: S. Milam

GA INSPECTOR: Michael Boatman PG
 CHECKED BY: Rachel Kirkman, PG
 DATE: 5/17/17



RECORD OF BOREHOLE B-76

SHEET 1 of 1

PROJECT: Plant McDonough
 PROJECT NUMBER: 1668496-01
 DRILLED DEPTH: 38.50 ft
 LOCATION: South by river, SE of B-83

DRILL RIG: Rotasonic 1159
 DATE STARTED: 9/16/19
 DATE COMPLETED: 9/16/19

NORTHING: 1,390,716.87
 EASTING: 2,202,755.99
 GS ELEVATION: 760.54
 TOC ELEVATION: 760.31 ft

DEPTH W.L.: 13.91
 DATE W.L.: 11/14/2020
 TIME W.L.: 12:05
 GW ELEVATION: 746.40

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0	760	0.00 - 11.00 Hydrovac, no soil recovery due to Hydrovac								<p>WELL CASING Interval: 0'-28.5' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw</p> <p>WELL SCREEN Interval: 28.5'-38.5' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC</p> <p>FILTER PACK Interval: 26.5'-38.5' Type: Filter Media</p> <p>FILTER PACK SEAL Interval: 17.0'-26.5' Type: PEL-PLUG 3/8"</p> <p>ANNULUS SEAL Interval: 0'-17.0' Type: AquaGuard Bentonite Grout</p> <p>WELL COMPLETION Pad: Protective Casing: 4" Stainless Steel</p> <p>DRILLING METHODS Soil Drill: Sonic Rock Drill: Sonic</p>
5	755									
10	750	11.00 - 19.00 Gravelly SILT, trace clay and sand, cohesive, low plasticity, moist to wet, w<PL, stiff.	ML		749.54 11.00	S1	ROTO SONIC	3.60 8.00		
15	745									
20	740	19.00 - 30.00 Gravelly CLAY, some fine sand, trace silt, cohesive, medium to high plasticity, wet, w> PL, soft, brown.	CL-CH		741.54 19.00	S2	ROTO SONIC	7.30 11.00		
25	735								PEL-PLUG 3/8" Bentonite Pellets #2 FilterSil	
30	730	30.00 - 38.50 Silty CLAY, trace weathered rock, cohesive, moderate plasticity, w~PL, wet, soft to firm, brown. PWR from 37.5 to 38.5	CL-ML		730.54 30.00	S3	ROTO SONIC	7.00 7.50		
35	725								0.010" Slotted Schedule 40 PVC	
40	720	Boring completed at 38.50 ft			722.04					

BOREHOLE RECORD MCDONOUGH MASTER LIST.GPJ PIEDMONT.GDT 2/17/20

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

GA INSPECTOR: D. Thomas
 CHECKED BY: Brian Steele, PG
 DATE: 2/10/20



RECORD OF BOREHOLE B-77

SHEET 1 of 1

PROJECT: Plant McDonough
 PROJECT NUMBER: 1668496-01
 DRILLED DEPTH: 42.00 ft
 LOCATION: South by river, SW of B-63

DRILL RIG: Rotasonic 1159
 DATE STARTED: 9/17/19
 DATE COMPLETED: 9/17/19

NORTHING: 1,390,949.76
 EASTING: 2,202,941.41
 GS ELEVATION: 777.06
 TOC ELEVATION: 776.75 ft

DEPTH W.L.: 28.50
 DATE W.L.: 1/13/2020
 TIME W.L.: 14:39
 GW ELEVATION: 748.25

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE			REC
0	775	0.00 - 8.00 Hydrovac, no soil recovery due to Hydrovac							<p>WELL CASING Interval: 0'-32' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw</p> <p>WELL SCREEN Interval: 32'-42' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC</p> <p>FILTER PACK Interval: 30'-42' Type: Filter Media</p> <p>FILTER PACK SEAL Interval: 22'-30' Type: PEL-PLUG 3/8"</p> <p>ANNULUS SEAL Interval: 0'-22' Type: AquaGuard Bentonite Grout</p> <p>WELL COMPLETION Pad: Protective Casing: 4" Stainless Steel</p> <p>DRILLING METHODS Soil Drill: Sonic Rock Drill: Sonic</p>	
		8.00 - 10.00 Fill		[Red Cross-hatch Pattern]	769.06 8.00	S1	ROTO SONIC			2.00 2.00
		10.00 - 20.00 Sandy SILT, trace clay, some gravel, reddish brown, low plasticity, w<PL, moist, firm, cohesive	MLS	[Vertical Lines Pattern]	767.06 10.00					
					757.06 20.00	S2	ROTO SONIC			8.00 10.00
		20.00 - 30.00 Sandy SILT, micaceous, trace clay, some gravel, reddish brown, low plasticity, w<PL, moist, firm, cohesive	MLS	[Vertical Lines Pattern]	747.06 30.00	S3	ROTO SONIC			4.50 10.00
		30.00 - 40.00 Silty CLAY, some sand, transitioning from reddish-brown to brownish gray, w~PL, moderate plasticity, moist to wet, soft to firm, cohesive,	CL-ML	[Diagonal Lines Pattern]	737.06 40.00	S4	ROTO SONIC	6.20 10.00		
		40.00 - 42.00 Silty CLAY, some sand, transitioning from reddish-brown to brownish gray, w~PL, moderate plasticity, soft to firm, moist to wet, transition to PWR, cohesive	CL-ML	[Diagonal Lines Pattern]	735.06 42.00	S5	ROTO SONIC	2.00 2.00		
		Boring completed at 42.00 ft								

BOREHOLE RECORD MCDONOUGH MASTER LIST.GPJ PIEDMONT.GDT 2/17/20

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

GA INSPECTOR: D. Thomas
 CHECKED BY: Brian Steele, PG
 DATE: 2/11/20



RECORD OF BOREHOLE B-78

SHEET 1 of 1

PROJECT: Plant McDonough
 PROJECT NUMBER: 1668496-01
 DRILLED DEPTH: 30.00 ft
 LOCATION: South of road on north side of plant property

DRILL RIG: Rotasonic 1159
 DATE STARTED: 9/22/19
 DATE COMPLETED: 9/22/19

NORTHING: 1,394,327.62
 EASTING: 2,202,958.92
 GS ELEVATION: 787.31
 TOC ELEVATION: 790.65 ft

DEPTH W.L.: 9.05
 DATE W.L.: 1/13/2020
 TIME W.L.: 13:44
 GW ELEVATION: 781.60

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0	785	0.00 - 8.70 Hydrovac							Concrete Surface Completion	WELL CASING Interval: 0.0 - 20.0' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw WELL SCREEN Interval: 20.0-29.5' Material: Schedule 40 PVC Schedule 40 PVC Diameter: 2" ID 4" OD Slot Size: 0.010 End Cap: Schedule 40 PVC FILTER PACK Interval: 17.5 - 30.0 Type: 20/40 FilterSil FILTER PACK SEAL Interval: 9.0 - 17.5' Type: Pel-Plug 3/8" Bentonite Pellets ANNULUS SEAL Interval: 0.4 - 9.0' Type: Baroid 3/8" Bentonite Chips (Holeplug) WELL COMPLETION Pad: 4' x 4' x 4" Protective Casing: 4" Stainless Steel DRILLING METHODS Soil Drill: Sonic Rock Drill: Sonic
5	780				0		0.00 8.70		Baroid 3/8" Bentonite Chips (Holeplug)	
10	775	8.70 - 11.20 (MLS) sandy SILT, low plasticity fines, fine to medium sub-angular sand, trace organics (roots); light brown (5YR 5/6) to Pale Brown (5YR 2/2), residual soil with frequent micaceous minerals present; cohesive, w-PL, soft	MLS		778.61 8.70					
15	770	11.20 - 17.00 (MLS) sandy SILT, non to low plasticity fines, fine sub-angular sand, trace soft (crumbles with pressure from fingers) gravels with relic foliations; pale yellowish brown (10YR 6/2) with light gray (N7) and dark yellowish brown (10YR 4/2) foliations, high	MLS		776.11 11.20	1	ROTO SONIC	11.30 11.30	Pel-Plug 3/8" Bentonite Pellets	
20	765	17.00 - 25.10 (SM) SILTY SAND, fine sub-angular to sub-rounded sand, non-plastic fines, trace fine angular soft (crumbles with pressure from fingers) with relic foliations; pale yellowish brown (10YR 6/2) with very pale orange (10YR 8/2) and dark yellowish brown (10YR	SM		770.31 17.00	2	ROTO SONIC	2.10 5.00	20/40 FilterSil Sandpack	
25	760	25.10 - 30.00 BEDROCK, GNEISS, slightly to moderately weathered (W2 - W3), medium dark gray (N4), with light bluish gray (5B 5/1) and light gray (N7) foliations, fine to medium grained, medium strong rock (R3)	GNEISS		762.21 25.10	3	ROTO SONIC	3.70 5.00	2"ID, 4"OD 0.010 Slot SCH 40 PVC U-Pack Screen	
30	755	Boring completed at 30.00 ft							PVC Cap	

BOREHOLE RECORD MCDONOUGH MASTER LIST.GPJ PIEDMONT.GDT 2/17/20

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

GA INSPECTOR: Jeff Ingram
 CHECKED BY: Brian Steele, PG
 DATE: 2/12/20



RECORD OF BOREHOLE B-79

SHEET 1 of 1

PROJECT: Plant McDonough
 PROJECT NUMBER: 1668496-01
 DRILLED DEPTH: 35.00 ft
 LOCATION: South of road on north side of plant property

DRILL RIG: Rotasonic 1159
 DATE STARTED: 9/20/19
 DATE COMPLETED: 9/21/19

NORTHING: 1,394,458.16
 EASTING: 2,203,223.80
 GS ELEVATION: 785.5
 TOC ELEVATION: 788.55 ft

DEPTH W.L.: 5.92
 DATE W.L.: 1/13/2020
 TIME W.L.: 14:26
 GW ELEVATION: 782.63

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0	785	0.00 - 9.20 Hydrovac							Concrete Surface Completion	WELL CASING Interval: 0.0 - 29.43' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw WELL SCREEN Interval: 24.93-34.43' Material: Schedule 40 PVC Schedule 40 PVC Diameter: 2" ID 4" OD Slot Size: 0.010 End Cap: Schedule 40 PVC
5	780		NA			0		0.00 9.20		
10	775	9.20 - 13.70 (ML) sandy SILT, non to low plasticity fines, fine sand; layered light brown (5YR 5/6) with dark yellowish brown (10YR 4/2) and pale yellowish brown (10YR 6/2) layers, some relic curved laminated layers (relic foliations); non-cohesive, wet, loose			776.3 9.20				Baroid 3/8" Bentonite Chips (Holeplug)	FILTER PACK Interval: 22.0 - 35.0' Type: 20/40 FilterSil FILTER PACK SEAL Interval: 14.0 - 22.0' Type: Pel-Plug 3/8" Bentonite Pellets ANNULUS SEAL Interval: 0.4 - 14.0' Type: Baroid 3/8" Bentonite Chips (Holeplug)
15	770	13.70 - 30.00 (SM) silty SAND, fine sub-angular sand, non-plastic fines, some soft (crumbles with pressure from fingers) fine to coarse sub-angular gravels; pale yellowish brown (10YR 6/2) with some light brown (5YR 5/6) iron oxide staining, PWR with frequent micaceous mineral; non-cohesive, wet, loose			771.8 13.70	1	ROTO SONIC	9.20 10.80		
20	765		SM			2	ROTO SONIC	5.00 5.00	Pel-Plug 3/8" Bentonite Pellets	WELL COMPLETION Pad: Protective Casing: 4" Stainless Steel DRILLING METHODS Soil Drill: Sonic Rock Drill: Sonic
25	760					3	ROTO SONIC	5.00 5.00		
30	755	30.00 - 35.00 (SM) SILTY SAND, fine sub-angular sand, non-plastic fines, trace soft (crumbles with pressure from fingers) fine gravels with some relic foliations; pale yellowish brown (10YR 6/2) to dark yellowish brown (10YR 4/2) layers, PWB; non-cohesive, moist, compact			755.5 30.00	4	ROTO SONIC	4.60 5.00	2"ID, 4"OD 0.010 Slot SCH 40 PVC U-Pack Screen	
35	750	Boring completed at 35.00 ft			750.5				PVC Cap - Backfill	
40	745									
45										

BOREHOLE RECORD: MCDONOUGH MASTER LIST.GPJ PIEDMONT.GDT 2/17/20

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

GA INSPECTOR: Jeff Ingram
 CHECKED BY: Brian Steele, PG
 DATE: 2/12/20



RECORD OF BOREHOLE B-80

SHEET 1 of 1

PROJECT: Plant McDonough
 PROJECT NUMBER: 1668496-01
 DRILLED DEPTH: 30.00 ft
 LOCATION: North to northeast of CCR Unit

DRILL RIG: Rotosonic 1159
 DATE STARTED: 9/20/19
 DATE COMPLETED: 9/20/19

NORTHING: 1,394,373.86
 EASTING: 2,203,534.26
 GS ELEVATION: 801.52
 TOC ELEVATION: 804.45 ft

DEPTH W.L.: 16.48
 DATE W.L.: 1/13/2020
 TIME W.L.: 14:46
 GW ELEVATION: 787.97

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0	800	0.00 - 8.70 Hydrovac	NA			0		0.00 8.70	Concrete Surface Completion High Solids Bentonite (Aquagaurd)	WELL CASING Interval: 0.0 - 19.8' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw WELL SCREEN Interval: 19.8-29.3' Material: Schedule 40 PVC Schedule 40 PVC Diameter: 2" ID 4" OD Slot Size: 0.010 End Cap: Schedule 40 PVC FILTER PACK Interval: 17.5 - 30.0' Type: 20/40 FilterSil FILTER PACK SEAL Interval: 9.0 - 17.5' Type: Pel-Plug 3/8" Bentonite Pellets ANNULUS SEAL Interval: 0.4 - 9.0' Type: High Solids Bentonite (Aquagaurd) WELL COMPLETION Pad: 4' x 4' x 4" Protective Casing: 4" Stainless Steel DRILLING METHODS Soil Drill: Sonic Rock Drill: Sonic
10	790	8.70 - 10.00 (ML) sandy SILT, non-plastic to low plasticity fines, fine to medium sub-rounded sand, trace organics (roots); moderate brown (5YR 4/4) to pale yellowish brown (10YR 6/2); non-cohesive, dry, loose 10.00 - 13.20 (ML and SP) SILT and SAND, non-plastic to low plasticity fines, fine sub-angular sand; light brown (5YR 5/6) with some moderate reddish brown (10R 4/6) layers, some laminated layers (relic foliations), SAPROLITE; non-cohesive, moist, loose	ML ML & SP		8.70 791.52 10.00	1	ROTO SONIC	1.30 1.30	Pel-Plug 3/8" Bentonite Pellets	
15	785	13.20 - 25.90 (SM) SILTY SAND, non-plastic to low plasticity fines, fine sub-angular sand; light brown (5YR 5/6) and pale yellowish brown (10YR 6/2) with trace very pale orange (10YR 8/1) grains, SAPROLITE; non-cohesive, wet, loose	SM SM		788.32 13.20	2	ROTO SONIC	9.70 10.00	20/40 FilterSil - Sandpack	
20	780	20.00: SAA, with frequent weathered micaceous minerals	SM SM							
25	775	25.90 - 30.00 (SM-SP) SAND, fine to medium sub-rounded sand, some non-plastic fines, trace angular fine to coarse soft (crumbles with pressure from fingers) gravels; very pale orange (10YR 8/2) with pale yellowish brown (10YR 6/2) mottling, PWR; non-cohesive, moist to wet, compact	SP-SM		775.62 25.90	3	ROTO SONIC	10.00 10.00	2"ID, 4"OD 0.010 Slot SCH 40 PVC U-Pack Screen	
30	770	Boring completed at 30.00 ft			771.52				PVC Cap	

BOREHOLE RECORD MCDONOUGH MASTER LIST.GPJ PIEDMONT.GDT 2/17/20

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

GA INSPECTOR: Jeff Ingram
 CHECKED BY: Brian Steele, PG
 DATE: 2/12/20



RECORD OF BOREHOLE B-81

SHEET 1 of 2

PROJECT: Plant McDonough
 PROJECT NUMBER: 1668496-01
 DRILLED DEPTH: 50.00 ft
 LOCATION: North to northeast of CCR Unit

DRILL RIG: Rotosonic 1159
 DATE STARTED: 9/20/19
 DATE COMPLETED: 9/22/19

NORTHING: 1,394,366.17
 EASTING: 2,203,741.53
 GS ELEVATION: 816.75
 TOC ELEVATION: 820.51 ft

DEPTH W.L.: 31.39
 DATE W.L.: 1/13/2020
 TIME W.L.: 15:06
 GW ELEVATION: 789.12

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0	815	0.00 - 9.00 Hydrovac							Concrete Surface Completion	WELL CASING Interval: 0.0 - 39.17' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw WELL SCREEN Interval: 39.17 - 49.17' Material: 39.17 - 49.17' Diameter: 2" ID 4" OD Slot Size: 0.010 End Cap: Schedule 40 PVC FILTER PACK Interval: 37.0 - 50.0' Type: 20/40 FilterSil FILTER PACK SEAL Interval: 17.0 - 37.0' Type: Pel-Plug 3/8" Bentonite Pellets ANNULUS SEAL Interval: 0.4 - 17.0' Type: High Solids Bentonite (Aquagard) WELL COMPLETION Pad: 4' x 4' x 4" Protective Casing: 4" Stainless Steel DRILLING METHODS Soil Drill: Sonic Rock Drill: Sonic
5	810		NA			0	0.00 9.00			
10	805	9.00 - 13.10 (SM) SILTY SAND, fine to medium sub-rounded sand, non-plastic fines, trace organics (roots); light brown (5YR 5/6) and moderate reddish brown (10R 4/6), SAPROLITE; non-cohesive, dry, compact	SM		807.75 9.00				High Solids Bentonite (Aquagard)	
15	800	13.10 - 17.90 (SM) SILTY SAND, fine sub-rounded sand, non-plastic fines; very pale orange (10YR 8/2) to grayish orange (10YR 7/6), PWR with frequent micaceous mineralization; non-cohesive, dry, loose	SM		803.65 13.10	1	ROTO SONIC 10.90 11.00	Cave in prior to installing Aquagard due to sampling requirements		
20	795	17.90 - 19.00 (ML and SP) SILT and SAND, non-plastic fine, fine to medium sub-rounded sand; light brown (5YR 5/6), PWR; non-cohesive, dry, compact. 19.00 - 23.50 (SP-SM) SAND, fine to medium sub-rounded sand, some non-plastic fines; grayish orange (10YR 7/4) with light brown (5YR 5/6) and dark yellowish brown (10YR 2/2) grains, PWR; non-cohesive, dry, compact 20.00: SAA with some pale reddish brown (10R 5/6) coloration	ML & SP SP-SM SP-SM		798.85 17.90 797.75 19.00					
25	790	23.50 - 33.60 (ML) sandy SILT, non-plastic to low plasticity fines, fine sub-angular sand; pale yellowish brown (10YR 6/2) to light brown (5YR 5/6), PWR; non-cohesive, moist, loose	ML		793.25 23.50	2	ROTO SONIC 9.90 10.00	Pel-Plug 3/8" Bentonite Pellets		
30	785	30.00: SAA with some greenish gray (5G 6/1) layers, trace fine soft angular gravels (crumble with finger pressure).	ML							
35	780	33.60 - 40.00 (SM and SP) SILT and SAND, non-plastic to low plasticity fines, fine sub-rounded sand, trace sub-angular soft (crumbles with finger pressure) gravels; yellowish gray (5YR 8/1) to pale pink (5R 8/2) to greenish gray (5G 6/1), very micaceous, PWR; non-cohesive, moist, loose	ML & SP		783.15 33.60	3	ROTO SONIC 10.00 10.00	Backfill - 20/40 FilterSil - Sandpack		
40	775	40.00 - 41.30 (ML and SP) SILT and SAND, non-plastic to low plasticity fines, fine to medium sub-rounded sand; grayish orange (10YR 7/6) to light olive gray (5Y 5/2), highly weathered with some relic foliation layers, PWR; non-cohesive, moist, compact 41.30 - 45.40 (SP and ML) SAND and SILT, fine sand, non-plastic fines; yellowish gray (5Y 8/1), very micaceous, PWR; non-cohesive, moist, loose	ML & SP SP & ML		776.75 40.00 775.45 41.30	4	ROTO SONIC 10.00 10.00	2"ID, 4"OD 0.010 Slot		

Log continued on next page

BOREHOLE RECORD: MCDONOUGH MASTER LIST.GPJ PIEDMONT.GDT 2/17/20

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

GA INSPECTOR: Jeff Ingram
 CHECKED BY: Brian Steele, PG
 DATE: 2/12/20



RECORD OF BOREHOLE B-83

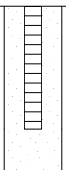
SHEET 2 of 2

PROJECT: Plant McDonough
 PROJECT NUMBER: 1668496-01
 DRILLED DEPTH: 50.00 ft
 LOCATION: South by river, NW of B-76

DRILL RIG: CME550X
 DATE STARTED: 9/30/19
 DATE COMPLETED: 9/30/09

NORTHING: 1,390,736.31
 EASTING: 2,202,695.17
 GS ELEVATION: 777.05
 TOC ELEVATION: 776.89 ft

DEPTH W.L.: 28.75
 DATE W.L.: 1/13/2020
 TIME W.L.: 14:52
 GW ELEVATION: 748.14

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES					MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE	REC		
					DEPTH (ft)							
45	730	43.50 - 49.00 CL, silty CLAY, brown with orange, moist to wet, W<PL, very soft to firm (<i>Continued</i>)	CL-ML	[Hatched Box]	728.05						Schedule 40 PVC 	WELL CASING Interval: 0'-38.6' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw WELL SCREEN Interval: 38.6'-48.6' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC FILTER PACK Interval: 36.6'-50' Type: Filter Media FILTER PACK SEAL Interval: 30.7'-36.6' Type: PEL-PLUG 3/8" ANNULUS SEAL Interval: 0'-30.7' Type: AquaGuard Bentonite Grout WELL COMPLETION Pad: 2' x 2' concrete Protective Casing: 8" Round Ground Flush DRILLING METHODS Soil Drill: 4.25-inch ID Hollow-Stem Auger Rock Drill: N/A
50		49.00 - 50.00 SM, silty SAND, PWR, black-brown mica schist Boring completed at 50.00 ft	SM	[Dotted Box]	49.00 727.05	S7	SS	8-15-18	33	1.50 1.50		
725												
55												
720												
60												
715												
65												
710												
70												
705												
75												
700												
80												
695												
85												
690												
90												

BOREHOLE RECORD MCDONOUGH MASTER LIST.GPJ PIEDMONT.GDT 2/17/20

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

GA INSPECTOR: K. Minkara
 CHECKED BY: Brian Steele, PG
 DATE: 2/11/20



RECORD OF BOREHOLE B-84

SHEET 2 of 2

PROJECT: Plant McDonough
 PROJECT NUMBER: 1668496-01
 DRILLED DEPTH: 50.00 ft
 LOCATION: NE of security gate, along road

DRILL RIG: CME550X
 DATE STARTED: 10/1/19
 DATE COMPLETED: 10/1/19

NORTHING: 1,390,411.65
 EASTING: 2,202,242.51
 GS ELEVATION: 776.27
 TOC ELEVATION: 776.24 ft

DEPTH W.L.: 30.12
 DATE W.L.: 1/14/2020
 TIME W.L.: 12:32
 GW ELEVATION: 746.12

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES					MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE	REC		
45	730	brown-black, micaceous, PWR, moist 45.00 - 50.00 ML, sandy SILT with gravel, brown-black, PWR, W<PL, wet to moist, PWR, very dense	ML		45.00						Schedule 40 PVC 	WELL CASING Interval: 0'-39.1' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw WELL SCREEN Interval: 39.1'-49.1' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC FILTER PACK Interval: 36.0'-49.5' Type: Filter Media FILTER PACK SEAL Interval: 30.6'-36.0' Type: PEL-PLUG 3/8" ANNULUS SEAL Interval: 0'-30.6' Type: AquaGuard Bentonite Grout WELL COMPLETION Pad: 2' x 2' concrete Protective Casing: 8" Round Ground Flush DRILLING METHODS Soil Drill: 4.25-inch ID Hollow Stem Auger Rock Drill: N/A
50		Boring completed at 50.00 ft			726.27	S7	SS	25-33-24	57	1.50 1.50		
55	720											
60	715											
65	710											
70	705											
75	700											
80	695											
85	690											
90												

BOREHOLE RECORD MCDONOUGH MASTER LIST.GPJ PIEDMONT.GDT 2/17/20

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

GA INSPECTOR: K. Minkara
 CHECKED BY: Brian Steele, PG
 DATE: 2/11/20



RECORD OF BOREHOLE B-86

SHEET 1 of 1

PROJECT: Plant McDonough
 PROJECT NUMBER: 1668496-01
 DRILLED DEPTH: 34.10 ft
 LOCATION: North of site along fence adjacent to B-79

DRILL RIG: CME 550
 DATE STARTED: 11/18/19
 DATE COMPLETED: 11/18/20

NORTHING: 1,394,479.84
 EASTING: 2,203,207.19
 GS ELEVATION: 784.50
 TOC ELEVATION: 784.40 ft

DEPTH W.L.: 0.91
 DATE W.L.: 1/13/2020
 TIME W.L.: 14:54
 GW ELEVATION: 783.49

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES					MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE			REC
0		0.00 - 7.00 Hydrovac to 7.00' to for utilities									AquaGuard Bentonite - Grout	WELL CASING Interval: 0'-34.1' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screen WELL SCREEN Interval: 21.4'-34.1' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC FILTER PACK Interval: 22.1'-34.1' Type: Filter Media FILTER PACK SEAL Interval: 17'-22.1' Type: PEL-PLUG 3/8" ANNULUS SEAL Interval: 0.0'-17' Type: AquaGuard Bentonite Grout WELL COMPLETION Pad: 2' x 2' concrete Protective Casing: 8" Round Ground Flush DRILLING METHODS Soil Drill: 4.25-inch ID Hollow Stem Auger Rock Drill: HQ Core Barrell
780		7.00 - 18.50 No Recovery										
775												
770												
765		18.50 - 23.50 SM, silty SAND, white to black and brown, fine to medium sand, saprolite, non-cohesive, wet, compact	SM	[Graphic Log]	766 18.50	1	SS	5-10-14	24	1.00 1.50	PEL-PLUG 3/8" Bentonite Pellets	
760		23.50 - 28.00 SW-SM, SAND with some silt and trace gravel, brown and white to black, saprolite, non-cohesive, wet, compact	SM	[Graphic Log]	761 23.50	2	SS	4-9-17	26	1.00 1.50	#2 FilterSil -	
755		28.00 - 34.10 Bedrock, AUGEN GNEISS, white to black, fresh to slightly weathered, strong	GNEISS	[Graphic Log]	756.5 28.00	3	CORE			4.00 5.00	0.010" Slotted Schedule 40 PVC	
750		Boring completed at 34.10 ft			750.4							

BOREHOLE RECORD MCDONOUGH MASTER LIST.GPJ PIEDMONT.GDT 2/17/20

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

GA INSPECTOR: W.Ballow
 CHECKED BY: Brian Steele, PG
 DATE: 2/11/20



RECORD OF BOREHOLE B-87

SHEET 1 of 1

PROJECT: Plant McDonough
 PROJECT NUMBER: 1668496-01
 DRILLED DEPTH: 42.00 ft
 LOCATION: North of site along fence, ~25 feet north of B-80

DRILL RIG: CME 550
 DATE STARTED: 11/17/19
 DATE COMPLETED: 11/17/19

NORTHING: 1,394,401.16
 EASTING: 2,203,531.64
 GS ELEVATION: 800.40
 TOC ELEVATION: 803.54 ft

DEPTH W.L.: 15.56
 DATE W.L.: 1/13/2020
 TIME W.L.: 14:54
 GW ELEVATION: 787.98

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES					MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE			REC
0	800	0.00 - 10.00 Hydrovac to 10.00' to for utilities									AquaGuard Bentonite - Grout #2 FilterSil - PEL-PLUG 3/8" Bentonite Pellets 0.010" Slotted Schedule 40 PVC	WELL CASING Interval: 0'-42' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screen WELL SCREEN Interval: 31.7'-41.7' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC FILTER PACK Interval: 29.2'-42.1' Type: Filter Media FILTER PACK SEAL Interval: 24'-29.2' Type: PEL-PLUG 3/8" ANNULUS SEAL Interval: 0'-24' Type: AquaGuard Bentonite Grout WELL COMPLETION Pad: 2' x 2' concrete Protective Casing: 8" Round Ground Flush DRILLING METHODS Soil Drill: 4.25-inch ID Hollow Stem Auger Rock Drill: N/A
5	795											
10	790	10.00 - 15.00 ML, clayey SILT with trace sand, light orange brown, W<PL, firm, cohesive	ML		790.4 10.00	1	SS	3-4-5	9	1.50 1.50		
15	785	15.00 - 20.00 ML, clayey SILT with some sand, orange brown, saprolite, W<PL, soft to firm. cohesive	ML		785.4 15.00	2	SS	2-2-9	11	1.50 1.50		
20	780	20.00 - 25.00 MLS, sandy SILT with trace gravel, dark brown, saprolite, non-cohesive, moist, very dense	MLS		780.4 20.00	3	SS	9-14-44	>50	1.00 1.50		
25	775	25.00 - 28.90 SM, silty SAND with some gravel, fine to coarse sand, dark grey, saprolite, moist to wet, very dense	SM		775.4 25.00	4	SS	50/5	>50	0.40 0.40		
30	770	28.90 - 33.80 SM, silty SAND, dark grey, saprolite, moist to wet, very dense	SM		771.5 28.90	5	SS	50/4	>50	0.30 0.30		
35	765	33.80 - 38.80 SM, silty SAND with gravel, white and grey, augen gneiss, moist to wet, very dense	SM		766.6 33.80	6	SS	50/4	750	0.30 0.30		
40	760				761.6 38.80							
45		Boring completed at 42.00 ft										

BOREHOLE RECORD MCDONOUGH MASTER LIST.GPJ PIEDMONT.GDT 2/17/20

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

GA INSPECTOR: W.Ballow
 CHECKED BY: Brian Steele, PG
 DATE: 2/11/20



RECORD OF BOREHOLE B-88

SHEET 1 of 2

PROJECT: Plant McDonough
 PROJECT NUMBER: 1668496-01
 DRILLED DEPTH: 72.40 ft
 LOCATION: North end of site along fence

DRILL RIG: CME 550
 DATE STARTED: 11/15/19
 DATE COMPLETED: 11/15/19

NORTHING: 1,394,400.23
 EASTING: 2,203,738.46
 GS ELEVATION: 816.60
 TOC ELEVATION: 820.11 ft

DEPTH W.L.: 31.47
 DATE W.L.: 1/13/2020
 TIME W.L.: 15:11
 GW ELEVATION: 788.64

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES					MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE			REC
0	815	0.00 - 10.00 Hydrovac to 10.00' to for utilities									AquaGuard Bentonite - Grout	WELL CASING Interval: 0'-72' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screen WELL SCREEN Interval: 62'-72' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC FILTER PACK Interval: 60'-72' Type: Filter Media FILTER PACK SEAL Interval: 55'-60' Type: PEL-PLUG 3/8" ANNULUS SEAL Interval: 0'-55' Type: AquaGuard Bentonite Grout WELL COMPLETION Pad: 2' x 2' concrete Protective Casing: 8" Round Ground Flush DRILLING METHODS Soil Drill: 4.25-inch ID Hollow Stem Auger Rock Drill: N/A
5	810											
10	805	10.00 - 15.00 SM, silty SAND with trace gravel, white and orange, saprolite, non-cohesive, dry, loose	SM	[Vertical Lines]	806.6 10.00							
15	800	15.00 - 19.00 SM, silty SAND with trace gravel, white and orange, saprolite, non-cohesive, dry, loose	SM	[Vertical Lines]	801.6 15.00	1	SS	6-5-2	7	$\frac{1.50}{1.50}$		
20	795	19.00 - 20.00 CL-ML, silt CLAY with some sand, brown, W<PL, firm	CL-ML	[Diagonal Hatching]	797.6 19.00 796.6 20.00	2	SS	7-5-2	7	$\frac{1.50}{1.50}$		
25	790	20.00 - 25.00 SM, silty SAND with some clay, fine to medium sand, orange and tan, low to no plasticity, W<PL, firm, cohesive	SM	[Vertical Lines]	791.6 25.00	3	SS	2-5-3	8	$\frac{1.50}{1.50}$		
30	785	25.00 - 30.00 SM, silty SAND with some clay, fine to medium sand, orange and tan with white, saprolite, low to no plasticity, W<PL, firm, cohesive	SM	[Vertical Lines]	786.6 30.00	4	SS	2-2-5	7	$\frac{1.50}{1.50}$		
35	780	30.00 - 34.00 SM, silty SAND with some clay, fine to medium sand, orange to tan with brown, saprolite, low to no plasticity, W<PL, firm, cohesive	SM	[Vertical Lines]	782.6 34.00 781.6 35.00	5	SS	5-13-20	33	$\frac{1.50}{1.50}$		
40	775	34.00 - 35.00 SM, silty SAND with some clay, fine sand, white, gneissic saprolite, non-cohesive, dense, dry	SM	[Vertical Lines]	776.6 40.00	6	SS	13-25-26	51	$\frac{1.00}{1.50}$		
45		35.00 - 40.00 SM, silty SAND, white and grey, fine to medium sand, saprolite, dry, dense	SM	[Vertical Lines]		7	SS	13-50/4	<50	$\frac{0.90}{0.90}$		
		40.00 - 44.40 ML, clayey SILT with trace sand and gravel, grey and brown some orange, saprolite, W<PL, very dense	ML	[Green Diagonal Hatching]	772.2 44.40							
		Log continued on next page	SP	[Vertical Lines]								

BOREHOLE RECORD MCDONOUGH MASTER LIST.GPJ PIEDMONT.GDT 2/17/20

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

GA INSPECTOR: W.Ballow
 CHECKED BY: Brian Steele, PG
 DATE: 2/11/20



RECORD OF BOREHOLE B-88

SHEET 2 of 2

PROJECT: Plant McDonough
 PROJECT NUMBER: 1668496-01
 DRILLED DEPTH: 72.40 ft
 LOCATION: North end of site along fence

DRILL RIG: CME 550
 DATE STARTED: 11/15/19
 DATE COMPLETED: 11/15/19

NORTHING: 1,394,400.23
 EASTING: 2,203,738.46
 GS ELEVATION: 816.60
 TOC ELEVATION: 820.11 ft

DEPTH W.L.: 31.47
 DATE W.L.: 1/13/2020
 TIME W.L.: 15:11
 GW ELEVATION: 788.64

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES				MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE		
45	770	44.40 - 48.80 SP, SAND with some gravel, fine to coarse sand, PWR, moist, very dense. PWR at 48.50 feet bgs. (Continued)	SP		767.8	8	SS	50/4	<50	0.30	<p>WELL CONSTRUCTION DETAILS:</p> <ul style="list-style-type: none"> WELL CASING Interval: 0'-72' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screen WELL SCREEN Interval: 62'-72' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC FILTER PACK Interval: 60'-72' Type: Filter Media FILTER PACK SEAL Interval: 55'-60' Type: PEL-PLUG 3/8" ANNULUS SEAL Interval: 0'-55' Type: AquaGuard Bentonite Grout WELL COMPLETION Pad: 2' x 2' concrete Protective Casing: 8" Round Ground Flush DRILLING METHODS Soil Drill: 4.25-inch ID Hollow Stem Auger Rock Drill: N/A
50	765	48.80 - 54.40 SP, SAND with some gravel, fine to coarse sand, PWR, moist, very dense	SP		48.80					0.30	
55	760	54.40 - 59.40 SP, SAND with some silt and gravel, white and orange, fine to coarse sand, saprolite, PWR, moist to wet, very dense	SP-SM		762.2	9	SS	33-50/3	<50	0.90	
60	755	59.40 - 63.80 SP, SAND with some silt and gravel, white and orange, fine to coarse sand, saprolite, PWR, moist to wet, very dense	SP-SM		757.2	10	SS	23-50/4	<50	0.90	
65	750	63.80 - 69.00 SP, SAND with some silt and gravel, white and orange, fine to coarse sand, saprolite, PWR, wet, very dense	SP-SM		752.8	11	SS	50/3	<50	0.30	
70	745	Boring completed at 72.40 ft			747.6	12	SS	38-50/1	<50	0.50	

BOREHOLE RECORD MCDONOUGH MASTER LIST.GPJ PIEDMONT.GDT 2/17/20

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

GA INSPECTOR: W.Ballow
 CHECKED BY: Brian Steele, PG
 DATE: 2/11/20



RECORD OF BOREHOLE B-89

SHEET 1 of 2

PROJECT: Plant McDonough
 PROJECT NUMBER: 1668496-01
 DRILLED DEPTH: 49.50 ft
 LOCATION: North of site in cement plant lot, next to retaining wall

DRILL RIG: CME 550
 DATE STARTED: 11/19/19
 DATE COMPLETED: 11/19/19

NORTHING: 1,394,399.07
 EASTING: 2,204,048.84
 GS ELEVATION: 822.50
 TOC ELEVATION: 822.50 ft

DEPTH W.L.: 21.78
 DATE W.L.: 1/13/2020
 TIME W.L.: 16:36
 GW ELEVATION: 800.72

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES					MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE			REC
0	820	0.00 - 10.00 Hydrovac to 10.00' to for utilities									AquaGuard Bentonite - Grout	WELL CASING Interval: 0'-49.5' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screen WELL SCREEN Interval: 39.5'-49.5' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC FILTER PACK Interval: 33.5'-49.5' Type: Filter Media FILTER PACK SEAL Interval: 28.5'-33.5' Type: PEL-PLUG 3/8" ANNULUS SEAL Interval: 0'-28.5' Type: AquaGuard Bentonite Grout WELL COMPLETION Pad: 2' x 2' concrete Protective Casing: 8" Round Ground Flush DRILLING METHODS Soil Drill: 4.25-inch ID Hollow Stem Auger Rock Drill: HQ Core Barrell
10	810	10.00 - 14.80 CL, clayey SILT with some sand and trace gravel, grey brown, cohesive, low to no plasticity, W<PL, firm to stiff	ML		812.5 10.00	1	SS	9-21-50/4	>50	1.20 1.30		
15	805	14.80 - 20.00 MLS, sandy SILT with some gravel, brown and dark grey, compact, dry, non cohesive	MLS		807.7 14.80	2	SS	5-10-19	29	1.30 1.50		
20	800	20.00 - 25.00 CL, clayey SILT with some sand, grey and brown, saprolite, cohesive, W<PL, firm	ML		802.5 20.00	3	SS	9-17-18	35	1.30 1.50		
25	795	25.00 - 29.00 CL, clayey SILT with some sand and trace gravel, grey and brown, highly weathered, saprolite, cohesive, W<PL, firm	ML		797.5 25.00	4	SS	10-19-23	42	1.50 1.50		
30	790	29.00 - 32.50 SP, gravelly SAND with some silt, grey to brown, PWR, non-cohesive, dense, dry	SP		793.5 29.00	5	CORE			2.50 2.50	PEL-PLUG 3/8" Bentonite Pellets	
35	785	32.50 - 35.00 Bedrock, SCHIST, light grey to dark grey, fresh to slightly weathered, strong to very strong			790 32.50						#2 FilterSil -	
40	780	35.00 - 40.00 Bedrock, SCHIST, light grey to dark grey, fresh to slightly weathered, strong to very strong			787.5 35.00							
45		40.00 - 44.00 Bedrock, SCHIST, light grey to dark grey, fresh to slightly weathered, strong to very strong			782.5 40.00							
		Log continued on next page			778.5 44.00						0.010" Slotted	

BOREHOLE RECORD MCDONOUGH MASTER LIST.GPJ PIEDMONT.GDT 2/17/20

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

GA INSPECTOR: W.Ballow
 CHECKED BY: Brian Steele, PG
 DATE: 2/11/20



RECORD OF BOREHOLE B-89



SHEET 2 of 2

PROJECT: Plant McDonough
 PROJECT NUMBER: 1668496-01
 DRILLED DEPTH: 49.50 ft
 LOCATION: North of site in cement plant lot, next to retaining wall

DRILL RIG: CME 550
 DATE STARTED: 11/19/19
 DATE COMPLETED: 11/19/19

NORTHING: 1,394,399.07
 EASTING: 2,204,048.84
 GS ELEVATION: 822.50
 TOC ELEVATION: 822.50 ft

DEPTH W.L.: 21.78
 DATE W.L.: 1/13/2020
 TIME W.L.: 16:36
 GW ELEVATION: 800.72

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES					MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE			REC
45		44.00 - 49.50 Bedrock, SCHIST, light grey to dark grey, fresh to slightly weathered, strong to very strong (Continued)			773						Schedule 40 PVC 	WELL CASING Interval: 0'-49.5' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screen WELL SCREEN Interval: 39.5'-49.5' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC FILTER PACK Interval: 33.5'-49.5' Type: Filter Media FILTER PACK SEAL Interval: 28.5'-33.5' Type: PEL-PLUG 3/8" ANNULUS SEAL Interval: 0'-28.5' Type: AquaGuard Bentonite Grout WELL COMPLETION Pad: 2' x 2' concrete Protective Casing: 8" Round Ground Flush DRILLING METHODS Soil Drill: 4.25-inch ID Hollow Stem Auger Rock Drill: HQ Core Barrell
775		Boring completed at 49.50 ft										
50												
770												
55												
765												
60												
760												
65												
755												
70												
750												
75												
745												
80												
740												
85												
735												
90												

BOREHOLE RECORD MCDONOUGH MASTER LIST.GPJ PIEDMONT.GDT 2/17/20

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

GA INSPECTOR: W.Ballow
 CHECKED BY: Brian Steele, PG
 DATE: 2/11/20



RECORD OF BOREHOLE B-90

SHEET 1 of 1

PROJECT: Plant McDonough
 PROJECT NUMBER: 1668496-01
 DRILLED DEPTH: 33.40 ft
 LOCATION: North of site along Plant Atkinson Road

DRILL RIG: CME 550
 DATE STARTED: 12/10/19
 DATE COMPLETED: 12/10/19

NORTHING: 1,394,500.73
 EASTING: 2,203,212.95
 GS ELEVATION: 784.20
 TOC ELEVATION: 784.18 ft

DEPTH W.L.: 0.88
 DATE W.L.: 1/14/2020
 TIME W.L.: 12:32
 GW ELEVATION: 783.30

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE		
0		0.00 - 6.00 CL, sandy CLAY, some gravel; gray to dark gray, cohesive, w > PL, wet	CLS		778.2				<p>WELL CASING Interval: 0'-33.4' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screen</p> <p>WELL SCREEN Interval: 23.4'-33.4' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC</p> <p>FILTER PACK Interval: 21.4'-33.4' Type: #2 FilterSil</p> <p>FILTER PACK SEAL Interval: 15.4'-21.4' Type: PEL-PLUG 3/8" Bentonite Pellets</p> <p>ANNULUS SEAL Interval: 0'-15.4' Type: AquaGuard Bentonite Grout</p> <p>WELL COMPLETION Pad: 2' x 2' concrete Protective Casing: 8" Round Ground Flush</p> <p>DRILLING METHODS Soil Drill: 4.25-inch ID Hollow Stem Auger Rock Drill: N/A</p>
780									
5		6.00 - 10.00 ML, sandy SILT, medium to coarse sand, some clay, trace gravel; light brown, cohesive, w ~ PL, wet	MLS		774.2				
775									
10		10.00 - 15.00 CL, sandy CLAY, medium to coarse sand; light brown, w ~ PL	CLS		774.2				
770									
15		15.00 - 23.00 SM, silty SAND, medium to coarse, some clay; light brown, wet	SM		769.2				
765									
20									
760		23.00 - 33.00 SM, silty SAND, medium to coarse, some clay, some subround to subangular gravel as feldspar and quartz; light brown to brown, wet, flowing	SM		761.2				
755									
30									
750		Boring completed at 33.40 ft			751.2				
35					33.00				
745									
40									
740									
45									

BOREHOLE RECORD MCDONOUGH MASTER LIST.GPJ PIEDMONT.GDT 2/17/20

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

GA INSPECTOR: W.Ballow
 CHECKED BY: Brian Steele, PG
 DATE: 2/11/20



RECORD OF BOREHOLE B-91

SHEET 1 of 1

PROJECT: Plant McDonough
 PROJECT NUMBER: 1668496-01
 DRILLED DEPTH: 35.00 ft
 LOCATION: North of site along Plant Atkinson Road

DRILL RIG: CME 550
 DATE STARTED: 12/11/19
 DATE COMPLETED: 12/11/19

NORTHING: 1,394,447.87
 EASTING: 2,203,124.30
 GS ELEVATION: 783.10
 TOC ELEVATION: 783.07 ft

DEPTH W.L.: 2.90
 DATE W.L.: 1/14/2020
 TIME W.L.: 12:34
 GW ELEVATION: 780.17

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE		
0		0.00 - 5.00 Fill, gravel							<p>WELL CASING Interval: 0'-35' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screen</p> <p>WELL SCREEN Interval: 24.6'-34.6' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC</p> <p>FILTER PACK Interval: 22.8'-35' Type: #2 FilterSil</p> <p>FILTER PACK SEAL Interval: 17.5'-22.5' Type: PEL-PLUG 3/8" Bentonite Pellets</p> <p>ANNULUS SEAL Interval: 0'-17.5' Type: Portland Cement, AquaGuard Bentonite Grout</p> <p>WELL COMPLETION Pad: 2' x 2' concrete Protective Casing: 8" Round Ground Flush</p> <p>DRILLING METHODS Soil Drill: 4.25-inch ID Hollow Stem Auger Rock Drill: N/A</p>
5	778.1	5.00 - 10.00 ML, SILT, some fine to medium sand, trace gravel; brown and gray, cohesive, w ~ PL	ML		778.1				
10	775	10.00 - 25.00 SP, SAND, medium to coarse, some angular gravel, some clay; gray, noncohesive, wet			773.1				
15	770				770				
20	765		SP		765				
25	760				760				
25	758.1	25.00 - 35.00 SM, silty SAND, fine to coarse, trace gravel; light brown, wet			758.1				
30	755		SM		755				
35	750				750				
35	748.1	Boring completed at 35.00 ft			748.1				
40	745				745				
45	740				740				

BOREHOLE RECORD MCDONOUGH MASTER LIST.GPJ PIEDMONT.GDT 2/17/20

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

GA INSPECTOR: W.Ballow
 CHECKED BY: Brian Steele, PG
 DATE: 2/11/20



RECORD OF BOREHOLE B-92

SHEET 1 of 1

PROJECT: Plant McDonough
 PROJECT NUMBER: 1668496-01
 DRILLED DEPTH: 25.00 ft
 LOCATION: North of site along Plant Atkinson Road

DRILL RIG: CME 550
 DATE STARTED: 12/11/19
 DATE COMPLETED: 12/11/19

NORTHING: 1,394,393.54
 EASTING: 2,203,026.60
 GS ELEVATION: 785.30
 TOC ELEVATION: 785.22 ft

DEPTH W.L.: 3.88
 DATE W.L.: 1/14/2020
 TIME W.L.: 12:36
 GW ELEVATION: 781.34

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE		
0	785	0.00 - 2.00 SP, gravelly SAND, medium to coarse; brown, non-cohesive, moist	SP	[Graphic Log: SP]	783.3			<p style="font-size: small;">AquaGuard Bentonite Grout PEL-PLUG 3/8" Bentonite Pellets #2 FilterSil 0.010" Slotted Schedule 40 PVC</p>	<p>WELL CASING Interval: 0'-25' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screen</p> <p>WELL SCREEN Interval: 14.6'-24.6' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC</p> <p>FILTER PACK Interval: 12.5'-25.0' Type: #2 FilterSil</p> <p>FILTER PACK SEAL Interval: 7.5'-12.5' Type: PEL-PLUG 3/8" Bentonite Pellets</p> <p>ANNULUS SEAL Interval: 0'-7.5' Type: AquaGuard Bentonite Grout</p> <p>WELL COMPLETION Pad: 2' x 2' concrete Protective Casing: 8" Round Ground Flush</p> <p>DRILLING METHODS Soil Drill: 4.25-inch ID Hollow Stem Auger Rock Drill: N/A</p>
5	780	2.00 - 10.00 CL-ML, silty CLAY, some sand, trace gravel; brown and gray, cohesive, w ~ PL	CL-ML	[Graphic Log: CL-ML]	2.00				
10	775	10.00 - 25.00 SC, clayey SAND, medium to coarse, some silt, some gravel; brown, wet	SC	[Graphic Log: SC]	775.3	10.00			
15	770								
20	765								
25	760	Boring completed at 25.00 ft			760.3				
30	755								
35	750								
40	745								
45									

BOREHOLE RECORD MCDONOUGH MASTER LIST.GPJ PIEDMONT.GDT 2/17/20

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

GA INSPECTOR: W.Ballow
 CHECKED BY: Brian Steele, PG
 DATE: 2/11/20



RECORD OF BOREHOLE B-93

SHEET 1 of 1

PROJECT: Plant McDonough
 PROJECT NUMBER: 1668496-01
 DRILLED DEPTH: 29.20 ft
 LOCATION: West of site on site along Plant Atkinson Road

DRILL RIG: CME 550
 DATE STARTED: 12/12/19
 DATE COMPLETED: 12/12/19

NORTHING: 1,394,348.37
 EASTING: 2,202,947.29
 GS ELEVATION: 789.20
 TOC ELEVATION: 789.14 ft

DEPTH W.L.: 4.86
 DATE W.L.: 1/14/2020
 TIME W.L.: 12:38
 GW ELEVATION: 784.28

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 5.00 SC, clayey SAND, fine to coarse; brown and orange-brown, non-cohesive, moist	SC		784.2					<p>WELL CASING Interval: 0'-29.2' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screen</p> <p>WELL SCREEN Interval: 18.9'-28.9' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC</p> <p>FILTER PACK Interval: 16.9'-29.2' Type: #2 FilterSil</p> <p>FILTER PACK SEAL Interval: 11.9'-16.9' Type: PEL-PLUG 3/8" Bentonite Pellets</p> <p>ANNULUS SEAL Interval: 0'-11.9' Type: Portland Cement, AquaGuard Bentonite Grout</p> <p>WELL COMPLETION Pad: 2' x 2' concrete Protective Casing: 8" Round Ground Flush</p> <p>DRILLING METHODS Soil Drill: 4.25-inch ID Hollow Stem Auger Rock Drill: N/A</p>
5	785	5.00 - 10.00 ML, clayey SILT, some sand, trace gravel; brown to light brown, cohesive, w < PL	ML		5.00					
10	780	10.00 - 15.00 ML, sandy SILT, coarse sand, some clay; gray-brown, cohesive, w < PL	ML		779.2					
15	775	15.00 - 20.00 ML, sandy SILT, coarse sand, some clay; brown, cohesive, w ~ PL	ML		774.2					
20	770	20.00 - 29.20 SM, silty SAND, fine to coarse, some clay, trace gravel; brown and gray-brown, wet	SM		769.2					
30	760	Boring completed at 29.20 ft			760					

BOREHOLE RECORD MCDONOUGH MASTER LIST.GPJ PIEDMONT.GDT 2/17/20

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

GA INSPECTOR: W.Ballow
 CHECKED BY: Brian Steele, PG
 DATE: 2/11/20



WELL DEVELOPMENT FIELD RECORD

JOB NAME Plant Mc. Donagh JOB NO. _____ WELL NO. B-76
 DEVELOPED BY D. Herrera / J. Arrenneule DATE OF INSTALL. 9/16/19 SHEET 1 OF 2
 STARTED DEVEL. 9/17/19 1727 COMPLETED DEVEL. _____
 DATE TIME DATE TIME
 W.L. BEFORE DEVEL. 18.30 9/17/19 1730 AFTER DEVEL. _____
 DEPTH DATE TIME DEPTH DATE TIME
 WELL DEPTH: BEFORE DEVEL. 38.5 ft AFTER DEVEL. _____ WELL DIA. (In) _____
 STANDING WATER COLUMN (FT.) 20.2 STANDING WELL VOLUME _____ gal.
 SCREEN LENGTH 10 ft. DRILLING WATER LOSS _____ gal.

DATE/TIME	VOLUME REMOVED (GALS)	FIELD PARAMETERS					REMARKS	
		SPEC. COND. (umhos/cm)	TEMP. (°F)	pH (s.u.)	NTU OTHER	D ₁₀		
9-17-19 1800						3490	lowered pump rate	
1810						3110		
1820						27.08	~ 1.5 gal/hr in past 10 min	
1830	3				69.3	27.42	~ 3 gal/hr submer increase pump	
1840	3				67	27.92		
1850	3				69.4	27.72		
1900	3				60.1	27.74		
1910	3				607	29.10		
1920	3				105.6	30.51		
1930	3				68.1	30.31	no passid about 30 gal	
1935					30 NTU		developed about 1/2 of screen.	
9-18-19 0855						WD 18.79	start pumping	
0920	4				69	35 ft 25.82 ft	pumped ~ 35 ft	
0934						28.15	pump @ 28 ft	
0938	5				76	26.5	pump @ 29 ft	
0946					51	28.6	pump @ 29 ft	
0954	5				48	27.3		
0959					53.2	26.6	pump @ 30 ft	
	35	= TOTAL VOLUME REMOVED (gal.)						32

DEVELOPMENT METHOD: _____

NOTES:



WELL DEVELOPMENT FIELD RECORD

JOB NAME McDONOUGH
 DEVELOPED BY Arthur D. Rose III
 STARTED LEVEL. 9-18-19 / 1005
DATE TIME
 W.L. BEFORE DEVEL. 32.58 / 9-18-19 / 0930
DEPTH DATE TIME
 WELL DEPTH: BEFORE DEVEL. 43.40
 STANDING WATER COLUMN (FT.) 10.82
 SCREEN LENGTH 10'

JOB NO. _____ WELL NO. B-77
 DATE OF INSTALL. 9-17-19 SHEET 1 OF _____
 COMPLETED LEVEL. _____ / _____
DATE TIME
 AFTER DEVEL. _____ / _____
DEPTH DATE TIME
 AFTER DEVEL. _____ WELL DIA. (In) _____
 STANDING WELL VOLUME _____ gal.
 DRILLING WATER LOSS _____ gal.

DATE/TIME	VOLUME REMOVED (GALS)	FIELD PARAMETERS					REMARKS	
		SPEC. COND. (umhos/cm)	TEMP. (°F)	pH (s.u.)	NTU OTHER			
9-18-19 1015	3.5					39.82		
1025	4.5					40.52		
1035	5.5					41.45		
1040	6.0						Stop purging to let well recharge	
1115	6.0					36.60		
1125	6.5					36.50		
1135	7.0					36.80		
1145	8.3					39.50		
1155	10					41.48		
1205	11					41.48	- stopped purging	
1225	11					38.50	- started purging slow surge	
1235	12					40.21		
1245	12.5					41.48	- stopped	
1315	12.5					37.24	- started surge and dropped temp?	
1325	13.0					38.92		
1335	13.5					39.62		
1345	14.0						Stopped and pulled reclaimer	
	<u>14</u>	= TOTAL VOLUME REMOVED (gal.)						

DEVELOPMENT METHOD: _____

NOTES:



WELL DEVELOPMENT FIELD RECORD

<p>JOB NAME <u>Plant McDonough</u></p> <p>DEVELOPED BY <u>Arthur D. Rose III</u></p> <p>STARTED LEVEL. <u>9-21-19</u> / <u>1550</u></p> <p>W.L. BEFORE DEVEL. <u>5.35</u> 5.35 <u>9-21-19</u> <u>1532</u></p> <p>WELL DEPTH: BEFORE DEVEL. <u>36.68</u></p> <p>STANDING WATER COLUMN (FT.) <u>31.33</u></p> <p>SCREEN LENGTH <u>10'</u></p>	<p>JOB NO. _____ WELL NO. <u>B-79</u></p> <p>DATE OF INSTALL. <u>9-21-19</u> SHEET <u>1</u> OF <u>1</u></p> <p>COMPLETED LEVEL. <u>5-21-19</u> / <u>1900</u></p> <p>AFTER DEVEL. <u>9-21-19</u> / <u>1855</u></p> <p>AFTER DEVEL. _____ WELL DIA. (in) <u>2</u></p> <p>STANDING WELL VOLUME <u>5.1</u> gal.</p> <p>DRILLING WATER LOSS <u>NA</u> gal.</p>
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DATE/TIME	VOLUME REMOVED (GALS)	FIELD PARAMETERS					REMARKS
		SPEC. COND. (umhos/cm)	TEMP. (°F)	pH (s.u.)	with OTHER	Dth	
9-21-19 1620	10						17.42 Surged a lot moving 1.5' incomb up and cl
1630	15						16.47 lots of surge
1640	20						20.72 surging
1650	25						22.71 surging
1700	30						22.74 surging
1710	35				2263	20.16	Surge
1720	39				2868	18.04	Surging
1730	43				1795	17.94	Surge
1740	47				1040	15.52	Surging
1750	51				672	18.05	No surging
1800	54				81.0	18.41	No surge
1810	56	1169	1983	5.43	252	12.28	no surge
1820	57	1200	21.06	5.49	11.7	8.07	no surge
1830	58	1160	20.88	5.36	10.2	7.81	no surge
1840	59	1152	20.84	5.41	16.2	7.70	no surge
1850	60	1152	20.78	5.45	14.2	7.72	no surge
1855	61	1149	20.78	5.46	9.9	7.71	no surge
	61	= TOTAL VOLUME REMOVED (gal.)					

DEVELOPMENT METHOD: _____

NOTES:



WELL DEVELOPMENT FIELD RECORD

<p>JOB NAME <u>Plant McDonough</u></p> <p>DEVELOPED BY <u>Arthur D. Rose</u></p> <p>STARTED LEVEL. <u>9-20-19</u> / <u>1306</u></p> <p style="text-align: center; font-size: small;">DATE TIME</p> <p>W.L. BEFORE LEVEL. <u>14.84</u> / <u>9-20-19</u> / <u>1220</u></p> <p style="text-align: center; font-size: small;">DEPTH DATE TIME</p> <p>WELL DEPTH: BEFORE LEVEL. <u>30.44</u></p> <p>STANDING WATER COLUMN (FT.) <u>15.6</u></p> <p>SCREEN LENGTH <u>10'</u></p>	<p>JOB NO. _____ WELL NO. <u>B-80</u></p> <p>DATE OF INSTALL. <u>9-20-19</u> SHEET <u>1</u> OF <u>1</u></p> <p>COMPLETED LEVEL. <u>9-20-19</u> / <u>1620</u></p> <p style="text-align: center; font-size: small;">DATE TIME</p> <p>AFTER LEVEL. <u>18.58</u> / <u>9-20-19</u> / <u>1638</u></p> <p style="text-align: center; font-size: small;">DEPTH DATE TIME</p> <p>AFTER LEVEL. <u>30.44</u> WELL DIA. (in) <u>2"</u></p> <p>STANDING WELL VOLUME <u>2.5</u> gal.</p> <p>DRILLING WATER LOSS <u>NA</u> gal.</p>
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DATE/TIME	VOLUME REMOVED (GALS)	FIELD PARAMETERS					REMARKS
		SPEC. COND. (umhos/cm)	TEMP. (°F)	pH (s.u.)	OTHER		
9-20-19 1305	0					Surge	
1315	4					20.60 Surged	
1325	7					20.88 Surged	
1335	10				183	20.89 Surged	
1345	12.5				104	20.98 Surge; lifted up 1.5'	
1355	15				127	21.30 Surged	
1405	17.5				624	2170 Surged	
1415	20				187	2190 No surging	
1425	22				41.2	1845 No surging	
1435	24	1230	21.73	5.78	23.1	17.82 No surging	
1445	25	1193	21.63	5.79	20.4	18.12 No surging	
1455	27	1232	21.55	5.77	8.62	18.23 Surged more 1.5'	
1505	30	1236	21.60	5.76	54	18.45 No surging	
1515	32	1247	21.48	5.76	60.5	18.52 No surging	
1530	35	1266	21.38	5.74	30.7	18.52 No surging	
1540	37	1276	21.28	5.72	17.5	18.56 No surging	
1550	40	1349	20.88	5.707	15.1	19.04 No surging	
1600	42	1307	20.78	5.63	2.25	18.84 No surging	
1620	46	= TOTAL VOLUME REMOVED (gal.)					

DEVELOPMENT METHOD: _____

NOTES:

1610 44 1290 20.71 5.64 216 18.64 No sur

1620 46 1290 20.71 5.64 210 18.58 no sur



WELL DEVELOPMENT FIELD RECORD

JOB NAME <u>Plant McDonough</u>	JOB NO.	WELL NO. <u>B-81</u>
DEVELOPED BY <u>Arthur D. Rose #</u>	DATE OF INSTALL. <u>9-20-19</u>	SHEET <u>1</u> OF <u>1</u>
STARTED DEVEL. <u>9-21-19 / 0947</u>	COMPLETED DEVEL. <u>9-21-19 / 1308</u>	
DATE TIME	DATE TIME	
W.L. BEFORE DEVEL. <u>28.93 / 9-21-19 / 0926</u>	AFTER DEVEL. <u>36.22 / 9-2 / 38.22 1300</u>	
DEPTH DATE TIME	DEPTH DATE TIME	
WELL DEPTH: BEFORE DEVEL. <u>50.45</u>	AFTER DEVEL. <u>50.45</u> WELL DIA. (in) <u>2</u>	
STANDING WATER COLUMN (FT.) <u>21.52</u>	STANDING WELL VOLUME <u>3.5</u> gal.	
SCREEN LENGTH <u>10</u>	DRILLING WATER LOSS <u>NA</u> gal.	

DATE/TIME	VOLUME REMOVED (GALS)	FIELD PARAMETERS					D _{tw}	REMARKS
		SPEC. COND. (umhos/cm)	TEMP. (°F)	pH (s.u.)	MTU OTHER			
9-21-19 1010	5						39.92 Surged	
1020	7.5						40.21 Surged	
1030	10						40.50 Surged	
1040	12.0						40.55 Surged	
1050	14						40.62 Surged	
1108	16						40.25 Surged move pump 1.5'	
1110	19						43.02 Surged	
1120	20						swd pump off to let recharge	
1130	20						38.08 swd and started pump	
1140	22						41.02 Surged dropped pm 0.5' dia	
1150	25							
1200	30				12.7	43.20	Surged	
1210	31.5				7.1	41.60	No surging	
1220	33				57.8	40.08	No surging	
1230	35	613	23.74	6.75	14.4	40.18	No surging	
1240	36	761.53	21.46	6.09	12.7	37.40	No surging	
1250	37	752.64	21.55	6.02	5.39	36.82	No surging	
1300	38	751.62	22.06	6.05	5.51	36.22		
1300	38	= TOTAL VOLUME REMOVED (gal.)						

DEVELOPMENT METHOD: _____

NOTES:

WELL DEVELOPMENT FIELD RECORD

JOB NAME McDonough JOB NO. 166849618 WELL NO. B-82
 DEVELOPED BY K. M. / Kca DATE OF INSTALL. _____ SHEET 1 OF 2
 STARTED LEVEL 9-23-191 ~~1122~~ 1125 COMPLETED LEVEL _____ / _____
 DATE TIME DATE TIME
 W.L. BEFORE DEVEL. 14.66 (bgs), 9-23-191, 1100 AFTER DEVEL. _____ / _____
 DEPTH DATE TIME DEPTH DATE TIME
 WELL DEPTH: BEFORE DEVEL. 49.60 (bgs) AFTER DEVEL. _____ WELL DIA. (In) _____
 STANDING WATER COLUMN (FT.) 29.94 STANDING WELL VOLUME _____ gal.
 SCREEN LENGTH 35-45 DRILLING WATER LOSS _____ gal.

DATE/TIME	VOLUME REMOVED (GALS)	pS/cm FIELD PARAMETERS					REMARKS
		SPEC. COND. (umhos/cm)	TEMP. (°F)	pH (s.u.)	NTU		
9-23-19							
11:30	5	1 part hot			7000	WL = 33.40	pump @ 43'
11:40	10	482.7	33.10	6.48	7000	33.31	43'
11:50	25	536.5	25.75	6.60	7000	33.25	43'
12:00	35	544.2	24.34	6.59	18.0	33.15	pump @ 42'
12:10	45	553.0	22.81	6.46	44.7	30.80	42'
12:20	55	555.8	23.52	6.41	39.7	31.28	42'
12:40	75	532.0	24.08	6.49	48.1	31.00	pump @ 40'
12:50	85	562.9	24.25	6.44	19.2	30.00	40'
13:00	95	564.8	24.14	6.40	13.38	31.05	40'
13:10	105	565.8	24.34	6.41	16.90	31.09	pump @ 38'
13:20	115	557.0	24.31	6.44	30.2	30.00	38'
13:30	125	566.9	23.58	6.39	13.5	30.02	pump @ 36'
13:40	135	566.9	24.07	6.34	26.8	30.00	36'
13:50	145	551.8	25.24	6.40	19.8	31.09	pump @ 40'
14:00	155	562.9	24.87	6.30	18.7	30.08	40'
14:10	165	552.5	24.54	6.42	11.9	31.00	40'
Lowering pump rate - connecting small tank							
	165	= TOTAL VOLUME REMOVED (gal.) prior to reduced flow (400 l/min)					

DEVELOPMENT METHOD: Regimer, pump & surge

NOTES:

WELL DEVELOPMENT FIELD RECORD

JOB NAME McDonough JOB NO. _____ WELL NO. B.83
 DEVELOPED BY Yong Chang Goo DATE OF INSTALL. _____ SHEET 1 OF 2
 STARTED DEVEL. 10/3/2019 10:15am COMPLETED DEVEL. _____ / _____
 DATE TIME DATE TIME
 W.L. BEFORE DEVEL. 32.4 10/3/19 9:35am AFTER DEVEL. _____ / _____
 DEPTH DATE TIME DEPTH DATE TIME
 WELL DEPTH: BEFORE DEVEL. 60.84 AFTER DEVEL. _____ WELL DIA. (In) _____
 STANDING WATER COLUMN (FT.) 16.44 STANDING WELL VOLUME _____ gal.
 SCREEN LENGTH 10 DRILLING WATER LOSS _____ gal.

DATE/TIME	VOLUME REMOVED (GALS)	FIELD PARAMETERS				REMARKS
		SPEC. COND. (mS/cm)	TEMP. (°C)	pH (s.u.)	Turbidity (NTU)	
10/3 10:20am	-					Pump @ 38' WL=32.5' WFL=1200L
10/3 10:35am	5					WL=33.04'
10:50am	5					WL=33
11:00am	5					WL=33.3
11:15am	5					WL=33.3
10/3 11:55am	-					
12:15pm	5					Pump @ 39' WL=33.1
12:45pm	5					Pump @ 40' WL=33.9
1:15pm	5					Pump @ 41' WL=33.0
2pm	5					Pump @ 43' WL=33
2:25pm	5					Pump @ 45' WL=33
2:45pm	5					Pump @ 44' WL=33.2
3:00pm	5					Pump @ 42' WL=33.3
3:15pm	5					Pump @ 41' WL=33.3
3:50pm	5					Pump @ 40' WL=33.0
4:10pm	5					Pump @ 39' WL=33.5
						Pump @ 38' WL=33.0
	70	= TOTAL VOLUME REMOVED (gal.)				

DEVELOPMENT METHOD: _____

NOTES: _____



WELL DEVELOPMENT FIELD RECORD

JOB NAME McDonough JOB NO. _____ WELL NO. B-84
 DEVELOPED BY J. Quenteville DATE OF INSTALL. _____ SHEET 1 OF 2
 STARTED DEVEL. 10/4/19 / 1045 COMPLETED DEVEL. 10/4/19 / 1655
DATE TIME
 W.L. BEFORE DEVEL. 32.95 / 10/4 / 1000 AFTER DEVEL. 39.0 / 10/4 / 1630
DEPTH DATE TIME
 WELL DEPTH: BEFORE DEVEL. 49.42 AFTER DEVEL. _____ WELL DIA. (In) 2
 STANDING WATER COLUMN (FT.) _____ STANDING WELL VOLUME _____ gal.
 SCREEN LENGTH 10 DRILLING WATER LOSS _____ gal.

DATE/TIME	VOLUME REMOVED (GALS)	FIELD PARAMETERS				REMARKS
		SPEC. COND. (umhos/cm)	TEMP. (°F)	pH (s.u.)	OTHER	
1054						WL: 38.05 pump at 40 JQ
1050						Start pump at 38
1054	5 JQ					WL: 38.05 pump at 41
1114	5					WL: 39.08 pump at 42
1120						WL: 42.00 pump at 45
1130						WL: 40.6 pump at 46 45
1150	5					WL: 42.5 pump at 46
1215						WL: 40.7 pump at 47
1236	5					WL: 40.5 pump at 46
1254	5					WL: 43.5 pump at 45
1320	5					WL: 39.61 pump at 41
1341					190	WL: 42.8
1400	5					WL: 40.0 pump at 43
1415						Pump off let well recover
1458						WL: 33.52 pump at 38
1502	5					WL: 38.2 pump at 40
1513						WL: 39.31 pump at 41
1523						WL: 39.7 pump at 42
1536						WL: 41.75 pump at 43
1541	5				52	WL: 40.0 "
	35	= TOTAL VOLUME REMOVED (gal.)				

DEVELOPMENT METHOD: Reclaimer Pump

NOTES:



WELL DEVELOPMENT FIELD RECORD

JOB NAME Plant McDonough JOB NO. 166849618 WELL NO. B-85
 DEVELOPED BY Yung Cuing So DATE OF INSTALL. 11/19/19 SHEET 1 OF 1
 STARTED DEVEL. 11/20/19 10:30 COMPLETED DEVEL. 11/20/19 14:30
 W.L. BEFORE DEVEL. DATE 6-44 TIME 11/20/19 AFTER DEVEL. DATE 1 TIME 1
 WELL DEPTH: BEFORE DEVEL. 27.71 AFTER DEVEL. 1 WELL DIA. (in) 2
 STANDING WATER COLUMN (FT.) 21.27 STANDING WELL VOLUME 3.47 gal.
 SCREEN LENGTH 10 ft DRILLING WATER LOSS - gal.

DATE/TIME	VOLUME REMOVED (GALS)	FIELD PARAMETERS					(ft) DTW	REMARKS Flow Rate
		NS/cm SPEC. COND. (umhos/cm)	TEMP. C	pH (s.u.)	NTU -OTHER			
11/20/19 10:35	0	0.77	18.66	6.57	7100	20.15	1 gal/min.	
10:44	9	0.58	18.61	6.19	7100	16.30	0.5 gal/min.	
10:59	7 51.65	0.52	18.30	5.80	7100	14.02	0.5 gal/min.	
11:13	7 23.5	0.14	18.21	5.72	139	14.01	0.5 gal/min.	
11:28	31.0	1.14	18.26	5.42	53.2	13.71	0.5 gal/min. Surge pull up	
11:43	38.5	1.14	18.26	5.47	7100 109	16.15	0.5 gal/min.	
11:53	43.5	1.14	18.25	5.45	57.4	15.50	0.5 gal/min.	
12:08	51	1.14	18.27	5.54	76.7	16.21	0.5 gal/min.	
12:23	58.5	1.14	18.34	5.52	19.2	16.72	0.5 gal/min.	
12:38	66.0	1.14	18.94	5.18	17.5	15.81	0.5 gal/min.	
12:53	73.5	1.15	18.30	5.50	7100	13.55	0.5 gal/min.	
13:08	81.0	1.15	18.24	5.56	17.6	13.39	0.5 gal/min.	
13:30	92.0	1.15	18.32	5.41	7100	14.62	0.5 gal/min.	
13:45	99.5	1.16	18.35	5.41	130	14.0.0	0.5 gal/min.	
14:00	107	1.16	18.39	5.40	388	14.36	0.5 gal/min.	
14:20	117	1.16	18.44	5.41	35.3	14.58	500 ml/min	
14:30	118	1.16	18.48	5.32	12.81	9.08	500 ml/min	
— 14:30 Stop pumping for pad construction —								
= TOTAL VOLUME REMOVED (gal.)								

DEVELOPMENT METHOD: compress air power pump with MP150, electric air compressor, generator, Lamotte 2000, smart tool (in situ).

NOTES: at 10:35 pump at 26.71 hrs. (1' above screen)
 at 11:28 pull pump 2' up & surge. at 24.71'
 11:53 2' at 22.71'
 12:08 2' up & surge at 20.71'
 12:23 2' up & surge at 18.71'
 12:38 pull 2' up & surge @ 16.71.
 13:08 pump @ 6" above bottom of well. (27').

PURGING AND SAMPLING FORM

Project #: 166849618	Project Name/Site Name: Plant McDonough Additional Sampling November 2019		Page: ___ of ___
Well ID #: B-85	Date: 11-20-19	Water Level (ft): 3.14	Time (WL): 1535
Physical Condition of Well:		Weather: Sunny	
Well Diameter (in): varies	Well Depth (ft): 27.71	Water Column (ft): 24.57	Well Volume (gal): 4.0
Start Purge: 15:38	End Purge: 1649	Top of Pump (ft): 22.71	
Evacuation Method: Low-Flow		Volume Removed (L): 35.5	
Evacuation Equipment: Vallex Geotech reclaimers		Purging Personnel: WB, JEB	
SmarTroll serial #: 613229		Lamotte serial #: 1479-4011	

Purge Data/Field Parameters

Time	Color & Appearance	Odor	pH (S.U.)	Cond. (uS/cm)	DO (mg/L)	Temp (C)	ORP (mV)	Turbidity (NTU)	DTW (ft BTOC)	Pumping Rate
1649	clear	no	5.38	1167.2	0.12	18.39	33.98	4.83	4.5	500

Stabilization Criteria: pH ± 0.1 S.U., Conductivity ± 5%, Dissolved Oxygen ± 10% or 0.2Mg/L (whichever is greater; for DO < 0.5mg/L, record only, no stabilization criteria), Turbidity ≤ 5 NTU; Purge volume ≥ 3L purge water, water level ≤ 0.3 ft; Temp and ORP record only

Sample Description

Sample ID: _____ Sample Date/Time: _____ Metals Date/Time: _____
 Duplicate: _____ Dup Date/Time: _____ Final Turbidity NTU: _____
 Field Blank: _____ Blank Date/Time: _____ Turbidity Date/Time: _____

# Sample Bottles	Container	Preservative	Analyte(s)
1	250 mL plastic	HNO ₃	Boron, Beryllium, Cobalt
1	250 mL plastic	--	Al, Mg, Mn, K, Na, Si, Ca
1	250 mL plastic	--	Alkalinity (Bicarbonate + Carbonate)
1	250 mL plastic	--	Ferrous + Ferric Iron
1	250 mL plastic	--	Cl, SO ₄

Signature: JEB





GOLDER

WELL DEVELOPMENT FIELD RECORD

JOB NAME Plant McDonough JOB NO. 166849618 WELL NO. B-86
 DEVELOPED BY SEB DATE OF INSTALL. 11-19-19 SHEET 1 OF 2
 STARTED DEVEL. 11-20-19 / 10:08 COMPLETED DEVEL. 11-19-19 / 1522
DATE TIME
 W.L. BEFORE DEVEL. 4.51 / 11-20-19 9:57 AFTER DEVEL. 5.38 / 11-19-19 1522
DEPTH DATE TIME
 WELL DEPTH: BEFORE DEVEL. 3583 AFTER DEVEL. _____ WELL DIA. (In) 2
 STANDING WATER COLUMN (FT.) 31.32 STANDING WELL VOLUME 4.96 gal.
 SCREEN LENGTH 10 feet DRILLING WATER LOSS _____ gal.

DATE/TIME	VOLUME REMOVED (GALS)	FIELD PARAMETERS				DTW	REMARKS
		SPEC. COND. (umhos/cm)	TEMP. (°C)	pH (s.u.)	NTU OTHER		
11-20-19 10:08	0	1088.5	18.17	6.18	71000	5.61	1/2 gal/min
10:21	6.5	1089.6	17.94	5.82	>1000	10.21	1.25 gal/min
10:45	36.5	1122.6	17.83	5.77	99.5	17.11	1.25 gal/min
11:00	18.8	1111.3	17.81	5.58	62.6	11.39	1.25 gal/min
11:15	18.8	1001.2	17.83	5.62	77.9	11.51	1.25 gal/min
11:30	18.8	1111.6	17.85	5.62	99.2	11.22	1.25 gal/min
11:45	18.8	1112.3	17.88	5.62	106.2	10.75	1.25 gal/min
12:00	18.8	1114.4	17.82	5.60	46.7	11.45	1.25 gal/min
12:15	18.8	1113.3	17.90	5.58	110	11.26	1.25 gal/min
12:30	18.8	1116.1	17.90	5.60	49.3	11.42	1.25 gal/min
12:45	18.8	1112.3	17.89	5.5	71.4	11.68	1.25 gal/min
13:00	18.8	1116.0	17.90	5.57	84.5	11.88	1.25 gal/min
13:15	18.8	1114.5	17.92	5.56	45.5	11.95	1.25 gal/min
13:30	18.8	1117.7	17.94	5.55	136	11.65	1.25 gal/min
13:45	18.8	1116.7	17.94	5.56	51.4	11.55	1.25 gal/min
14:00	18.8	1114.6	17.94	5.54	144	12.12	1.25 gal/min
14:15	18.8	1108.8	17.90	5.53	40.6	12.05	1.25 gal/min
14:30	3.75	1124.8	18.26	5.44	12.02	6.70	0.25 gal/min
14:40	3.75	1122.2	18.57	5.45	4.89	6.17	0.25 gal/min
	313.7	= TOTAL VOLUME REMOVED (gal)					

DEVELOPMENT METHOD: _____

NOTES: 10:08 - pump 1 ft above bottom of screen
 11:00 - pulled pump up to 3 ft and surged screen
 12:00 - 5 ft below bottom of screen - surged
 12:30 - 7 ft below bottom of screen - surged
 13:15 - 9 ft below bottom of screen
 13:45 - moved to 0.5 ft below bottom of screen - surged
 14:15 - reduces pump rate

PURGING AND SAMPLING FORM

Project #: 166849618	Project Name/Site Name: Plant McDonough Additional Sampling November 2019		Page: <u>2</u> of <u>2</u>
Well ID #: <u>B-86</u>	Date: <u>11-20-19</u>	Water Level (ft): <u>5.6</u>	Time (WL): <u>1446</u>
Physical Condition of Well:		Weather: <u>sunny</u>	
Well Diameter (in): varies	Well Depth (ft): <u>35.83</u>	Water Column (ft): <u>30.23</u>	Well Volume (gal): <u>4.93</u>
Start Purge: <u>15:00</u>	End Purge: <u>1522</u>	Top of Pump (ft): <u>30</u>	
Evacuation Method: Low-Flow		Volume Removed (L): <u>11</u>	
Evacuation Equipment: <u>AAKRS Geotech reclaimer</u>		Purging Personnel: <u>SEB, WB</u>	
SmarTroll serial #: <u>364452</u>		Lamotte serial #: <u>6411-1416</u>	

Purge Data/Field Parameters

Time	Color & Appearance	Odor	pH (S.U.)	Cond. (uS/cm)	DO (mg/L)	Temp (C)	ORP (mV)	Turbidity (NTU)	DTW (ft BTOC)	Pumping Rate
<u>1522</u>	<u>clear</u>	<u>no</u>	<u>5.42</u>	<u>1122.5</u>	<u>0.49</u>	<u>18.75</u>	<u>76.10</u>	<u>4.38</u>	<u>5.38</u>	<u>500</u>

Stabilization Criteria: pH ± 0.1 S.U., Conductivity ± 5%, Dissolved Oxygen ± 10% or 0.2Mg/L (whichever is greater; for DO < 0.5mg/L, record only, no stabilization criteria), Turbidity ≤ 5 NTU; Purge volume ≥ 3L purge water, water level ≤ 0.3 ft; Temp and ORP record only

Sample Description

Sample ID: _____ Sample Date/Time: _____ Metals Date/Time: _____
 Duplicate: _____ Dup Date/Time: _____ Final Turbidity NTU: _____
 Field Blank: _____ Blank Date/Time: _____ Turbidity Date/Time: _____

# Sample Bottles	Container	Preservative	Analyte(s)
1	250 mL plastic	HNO ₃	Boron, Beryllium, Cobalt
1	250 mL plastic	--	Al, Mg, Mn, K, Na, Si, Ca
1	250 mL plastic	--	Alkalinity (Bicarbonate + Carbonate)
1	250 mL plastic	--	Ferrous + Ferric Iron
1	250 mL plastic	--	Cl, SO ₄

Signature: AB



WELL DEVELOPMENT FIELD RECORD

JOB NAME <u>McDonough</u>	JOB NO. _____	WELL NO. <u>B-87</u>
DEVELOPED BY _____	DATE OF INSTALL. _____	SHEET <u>2</u> OF _____
STARTED LEVEL. <u>11/21/19</u>	COMPLETED LEVEL. _____	DATE _____ TIME _____
DATE _____ TIME _____	DATE _____ TIME _____	
W.L. BEFORE DEVEL. _____	AFTER DEVEL. _____	DEPTH _____ DATE _____ TIME _____
DEPTH _____ DATE _____ TIME _____	DEPTH _____ DATE _____ TIME _____	
WELL DEPTH: BEFORE DEVEL. _____	AFTER DEVEL. _____	WELL DIA. (In) _____
STANDING WATER COLUMN (FT.) _____	STANDING WELL VOLUME _____	gal.
SCREEN LENGTH _____	DRILLING WATER LOSS _____	gal.

DATE/TIME	VOLUME REMOVED (GALS)	FIELD PARAMETERS				WL	REMARKS	
		SPEC. COND. (mS/cm)	TEMP. (°C)	pH (s.u.)	Turbidity (NTU)			
							FLOW	
<u>11/21/19 1115</u>		<u>1.93</u>	<u>17.50</u>	<u>6.10</u>	<u>111</u>	<u>33.79</u>	<u>0.5 gal/min</u>	
<u>1130</u>		<u>1.97</u>	<u>17.37</u>	<u>6.16</u>	<u>>1000</u>	<u>34.01</u>	<u>0.5 gal/min</u>	
<u>1145</u>		<u>2.00</u>	<u>17.31</u>	<u>6.07</u>	<u>>1000</u>	<u>34.85</u>	<u>0.5 gal/min</u>	
<u>1200</u>		<u>2.01</u>	<u>17.14</u>	<u>6.06</u>	<u>123</u>	<u>34.65</u>	<u>0.5 gal/min</u>	
<u>1200</u>		<u>1.95</u>	<u>17.55</u>	<u>6.07</u>	<u>>1000</u>	<u>34.89</u>	<u>0.5 gal/min</u>	
<u>1225</u>		<u>2.0</u>	<u>17.44</u>	<u>6.06</u>	<u>>1000</u>	<u>34.79</u>	<u>0.5 gal/min</u>	
<u>1230</u>		<u>1.98</u>	<u>17.55</u>	<u>6.73</u>	<u>166</u>	<u>34.71</u>	<u>0.5 gal/min</u>	
<u>1245</u>		<u>2.01</u>	<u>17.63</u>	<u>5.97</u>	<u>662</u>	<u>33.91</u>	<u>0.5</u>	
<u>1300</u>		<u>2.03</u>	<u>17.39</u>	<u>6.04</u>	<u>103.1</u>	<u>33.95</u>	<u>0.5</u>	
<u>1305</u>		<u>2.03</u>	<u>17.34</u>	<u>5.97</u>	<u>75.8</u>	<u>33.85</u>	<u>0.5</u>	
<u>1320</u>		<u>1.28</u>	<u>17.78</u>	<u>6.06</u>	<u>>1000</u>	<u>31.80</u>	<u>0.5</u>	
<u>1345</u>		<u>2.02</u>	<u>17.54</u>	<u>5.69</u>	<u>>1000</u>	<u>33.03</u>	<u>0.5</u>	
<u>1400</u>		<u>2.01</u>	<u>17.77</u>	<u>5.91</u>	<u>275</u>	<u>33.05</u>	<u>0.5</u>	
<u>1415</u>		<u>2.04</u>	<u>17.72</u>	<u>5.75</u>	<u>43.6</u>	<u>33.70</u>	<u>0.5</u>	
<u>1430</u>		<u>2.02</u>	<u>17.57</u>	<u>5.89</u>	<u>36.2</u>	<u>34.02</u>	<u>0.5</u>	
		= TOTAL VOLUME REMOVED (gal.)						

DEVELOPMENT METHOD: _____

NOTES: 1115 - moved to 4 ft - Surged
1200 - moved to 7 ft
1230 - moved to 9 ft
1315 - moved to 0.5 ft

WELL DEVELOPMENT FIELD RECORD

JOB NAME <u>McDonough</u> DEVELOPED BY <u>SEP</u> STARTED DEVEL. <u>11/21/19 1030</u> DATE TIME W.L. BEFORE DEVEL. <u>32.65 11-21-19 9:22</u> DEPTH DATE TIME WELL DEPTH: BEFORE DEVEL. <u>75.05</u> STANDING WATER COLUMN (FT.) <u>42.4</u> SCREEN LENGTH <u>10 feet</u>	JOB NO. <u>166849618</u> WELL NO. <u>B-88</u> DATE OF INSTALL. _____ SHEET <u>1</u> OF <u>3</u> COMPLETED DEVEL. <u>11-21-19 1645</u> DATE TIME AFTER DEVEL. <u>33.0 11-21-19 1645</u> DEPTH DATE TIME AFTER DEVEL. _____ WELL DIA. (In) <u>2</u> STANDING WELL VOLUME <u>6.859</u> gal. DRILLING WATER LOSS _____ gal.
--	--

DATE/TIME	VOLUME REMOVED (GALS)	FIELD PARAMETERS				REMARKS	
		SPEC. COND. (mS/cm)	TEMP. (°C)	pH (s.u.)	Turbidity (NTU)	WL	FLOW (gpm)
11/21/19 1040	2.5	1.08	17.84	6.61	2100.2	33.70	0.25 gal/min
1045	10	1.10	17.76	6.50	2100.2	35.48	1.5 gal/min
1100	32.5	1.13	17.68	6.28	2100.2	35.35	1.5 gal/min
1115	55	1.16	17.63	6.18	44.8	35.51	1.5 gal/min
1130	92.5	1.20	17.36	6.19	73	35.12	1.5 gal/min
1145	100.0	1.21	17.29	6.17	34.8	35.30	1.5 gal/min
1200	122.5	1.22	17.72	5.98	79.7	35.5	1.5 gal/min
1215	145	1.24	17.27	6.12	42.2	35.65	1.5 gal/min
1230	167.5	1.28	17.45	6.05	86.3	35.85	1.5 gal/min
1245	190	1.30	17.	5.65	25.7	35.87	1.5 gal/min
1300	212.5	1.33	17.28	6.01	118	35.45	1.5 gal/min
1315	235	1.33	17.31	6.10	19.4	35.46	1.5 gal/min
1330	257.5	1.34	17.57	5.93	25.3	35.48	1.5 gal/min
1345	261.25	1.34	17.94	5.56	9.28	33.78	0.25
1400	265	1.34	17.90	5.67	10.29	33.48	0.25
1415	268.75	1.33	17.84	5.52	11.50	33.52	0.25
1430	272.5	1.34	17.54	5.77	9.29	33.55	0.25
1445	276.25	1.33	17.76	5.47	7.51	33.6	0.25
276.25		= TOTAL VOLUME REMOVED (gal.)					

DEVELOPMENT METHOD: _____

NOTES:

1130 ~~1130~~ - moved pump to 4ft above screen bottom - surged

1145 - moved pump to 7ft above screen bottom

1215 - moved pump to 9ft

1245 - moved pump to 0.5ft " " " - surged

1330 - reduced pump rate

PURGING AND SAMPLING FORM

Project #: 166849618	Project Name/Site Name: Plant McDonough Additional Sampling		Page: <u>3</u> of <u>3</u>
Well ID #: <u>B-88</u>	Date: <u>11-21-19</u>	Water Level (ft): <u>33.46</u>	Time (WL): <u>1520</u>
Physical Condition of Well:		Weather: <u>cloudy 64°F</u>	
Well Diameter (in): varies	Well Depth (ft): 75.05 <u>75.05</u>	Water Column (ft): <u>41.57</u>	Well Volume (gal): <u>6.78</u>
Start Purge: <u>15:35</u>	End Purge: <u>16:45</u>	Top of Pump (ft): 74.5 <u>74.5</u>	
Evacuation Method: Low-Flow		Volume Removed (L): <u>22.6</u>	
Evacuation Equipment: <u>Geotech reclaimer</u>		Purging Personnel: <u>SEB</u>	
SmarTroll serial #: <u>364452</u>		Lamotte serial #: <u>6411-1416</u>	

Purge Data/Field Parameters

Time	Color & Appearance	Odor	pH (S.U.)	Cond. (uS/cm)	DO (mg/L)	Temp (C)	ORP (mV)	Turbidity (NTU)	DTW (ft BTOC)	Pumping Rate
<u>1645</u>	<u>clear</u>		<u>5.55</u>	<u>1320.06</u>	<u>0.41</u>	<u>17.72</u>	<u>69.40</u>	<u>3.27</u>	<u>33.0</u>	<u>280</u>

Stabilization Criteria: pH ± 0.1 S.U, Conductivity ± 5%, Dissolved Oxygen ± 10% or 0.2Mg/L (whichever is greater; for DO < 0.5mg/L, record only, no stabilization criteria), Turbidity ≤ 5 NTU; Purge volume ≥ 3L purge water, water level ≤ 0.3 ft; Temp and ORP record only

Sample Description

Sample ID: _____ Sample Date/Time: _____ Metals Date/Time: _____
 Duplicate: _____ Dup Date/Time: _____ Final Turbidity NTU: _____
 Field Blank: _____ Blank Date/Time: _____ Turbidity Date/Time: _____

# Sample Bottles	Container	Preservative	Analyte(s)
1	250 mL plastic	HNO ₃	Boron, Beryllium, Cobalt
1	250 mL plastic	--	Al, Mg, Mn, K, Na, Si, Ca
1	250 mL plastic	--	Alkalinity (Bicarbonate + Carbonate)
1	250 mL plastic	--	Ferrous + Ferric Iron
1	250 mL plastic	--	Cl, SO ₄

Signature: SEB

Note: dropped flow rate to 280 mL/min @ 1600



PURGING AND SAMPLING FORM

Project #: 166849618	Project Name/Site Name: Plant McDonough Additional Sampling November 2019		Page: <u>2</u> of <u>2</u>
Well ID #: <u>B-89</u>	Date: <u>11-22-19</u>	Water Level (ft): <u>26.91</u>	Time (WL): <u>1145</u>
Physical Condition of Well:		Weather: <u>Sunny</u>	
Well Diameter (in): varies	Well Depth (ft): <u>48.89</u>	Water Column (ft): <u>21.98</u>	Well Volume (gal): <u>3.58</u>
Start Purge: <u>1200</u>	End Purge: <u>1228</u>	Top of Pump (ft): <u>49.00</u>	
Evacuation Method: Low-Flow		Volume Removed (L): <u>6.72</u>	
Evacuation Equipment: <u>Geotech Reclaimer</u>		Purging Personnel: <u>SEB</u>	
SmarTroll serial #: <u>613229</u>		Lamotte serial #: <u>1479-4011</u>	

Purge Data/Field Parameters

Time	Color & Appearance	Odor	pH (S.U.)	Cond. (uS/cm)	DO (mg/L)	Temp (C)	ORP (mV)	Turbidity (NTU)	DTW (ft BTOC)	Pumping Rate
<u>1228</u>	<u>clear</u>	<u>none</u>	<u>5.73</u>	<u>457.70</u>	<u>2.44</u>	<u>20.14</u>	<u>51.50</u>	<u>0.38</u>	<u>23.95</u>	<u>240</u>

Stabilization Criteria: pH ± 0.1 S.U., Conductivity ± 5%, Dissolved Oxygen ± 10% or 0.2Mg/L (whichever is greater; for DO < 0.5mg/L, record only, no stabilization criteria), Turbidity ≤ 5 NTU; Purge volume ≥ 3L purge water, water level ≤ 0.3 ft; Temp and ORP record only

Sample Description

Sample ID: _____ Sample Date/Time: _____ Metals Date/Time: _____
 Duplicate: _____ Dup Date/Time: _____ Final Turbidity NTU: _____
 Field Blank: _____ Blank Date/Time: _____ Turbidity Date/Time: _____

# Sample Bottles	Container	Preservative	Analyte(s)
1	250 mL plastic	HNO ₃	Boron, Beryllium, Cobalt
1	250 mL plastic	--	Al, Mg, Mn, K, Na, Si, Ca
1	250 mL plastic	--	Alkalinity (Bicarbonate + Carbonate)
1	250 mL plastic	--	Ferrous + Ferric Iron
1	250 mL plastic	--	Cl, SO ₄

Signature: AB



GOLDER

WELL DEVELOPMENT FIELD RECORD

JOB NAME McDonough
 DEVELOPED BY Arthur O. Rosc III
 STARTED DEVEL. 12-17-14 10957
DATE TIME
 W.L. BEFORE DEVEL. 3.04 12-17-14 10957
DEPTH DATE TIME
 WELL DEPTH: BEFORE DEVEL. 3.04
 STANDING WATER COLUMN (FT.) 31.34
 SCREEN LENGTH 10'

JOB NO. _____ WELL NO. R-90
 DATE OF INSTALL. 12-11-14 SHEET 2 OF 2
 COMPLETED DEVEL. 12-14-14 1300
DATE TIME
 AFTER DEVEL. NA, NA, NA
DEPTH DATE TIME
 AFTER DEVEL. NA WELL DIA. (in) 2"
 STANDING WELL VOLUME NA gal.
 DRILLING WATER LOSS NA gal.

DATE/TIME	VOLUME REMOVED (GALS)	FIELD PARAMETERS					REMARKS
		SPEC. COND. (umhos/cm)	TEMP. (°F)	pH (s.u.)	NTN OTHER	DTW	
12-12-14 1007	5				7100	1' from bottom surging	
1016	10				7100	10.99 2' from bottom surging	
1023	15				7100	11.75 3' from bottom surging	
1030	20				7100	10.85 3' from bottom surging	
1040	25				7100	10.62 4' from bottom sur	
1047	30				7100	11.70 4' from bottom surging	
1055	35				7100	13.50 4' from bottom sur	
1106	40				7100	10.75 4' from bottom sur	
1113	45				7100	12.82 4' from bottom sur	
1123	50				7100	10.98 4' from bottom surging	
1133	55				7100	11.52 4' from bottom surging surging	
1143	60				>100	12.73 4' from bottom No surging	
1153	65				7100	12.43 5' from bottom and surging	
1203	70				>100	12.94 6' from bottom and surging	
1212	75				7100	12.45 7' from bottom surging	
1222	80				>100	12.42 8' from bottom surging	
1231	85				>100	12.52 9' from bottom sur	
1240	90				7100	12.42 1' from bottom surging	
1253	95				>100	11.84 2' from bottom sur	
1310	100				>100	12.63 3' from bottom surging	
	1004 40	= TOTAL VOLUME REMOVED (gal.)					

today yesterday

DEVELOPMENT METHOD: _____

NOTES:



GOLDER

WELL DEVELOPMENT FIELD RECORD

JOB NAME	<u>McDonough</u>	JOB NO.	<u>12-11-19</u>	WELL NO.	<u>B-90</u>
DEVELOPED BY	<u>Arthur D. Rose III</u>	DATE OF INSTALL.	12-11-19	SHEET	<u>1</u> OF <u>2</u>
STARTED LEVEL	<u>12-13-19 10930</u>	COMPLETED LEVEL	<u>12-14-19 11000</u>		
W.L. BEFORE DEVEL.	<u>1.32</u> DATE <u>12-17-19</u> TIME <u>09:10</u>	AFTER DEVEL.	<u>NA</u> DATE <u>NA</u> TIME <u>NA</u>		
WELL DEPTH: BEFORE DEVEL.	<u>32.96</u>	AFTER DEVEL.	<u>NA</u> WELL DIA. (in)	<u>2"</u>	
STANDING WATER COLUMN (FT.)	<u>NA</u>	STANDING WELL VOLUME	<u>NA</u>	gal.	
SCREEN LENGTH	<u>10'</u>	DRILLING WATER LOSS	<u>NA</u>	gal.	

DATE/TIME	VOLUME REMOVED (GALS)	FIELD PARAMETERS					REMARKS
		SPEC. COND. (umhos/cm)	TEMP. (°F)	pH (s.u.)	NTU OTHER	D ₄₀	
12-13-19 1000	15	1196	18.08	5.97	80	6.62	
1010	19	1186	18.11	5.92	82.8	6.90	
1020	22.5	1178	18.12	5.89	42.9	6.96	
1030	25	1168	18.04	5.85	30.5	6.97	
1040	30	1161	18.03	5.82	21.6	7.06	
1050	35	1159	18.09	5.80	14.2	7.20	
1100	40	1145	18.14	5.78	10.47	7.32	
1110	45	1141	18.14	5.75	10.13	7.62	
1120	50	1156	18.16	5.74	9.21	7.96	
1130	55	1155	18.17	5.72	10.93	8.21	
1140	60	1156	18.15	5.71	7.40	7.79	
1150	65	1156	18.16	5.71	7.4	7.79	
1200	70	1153	18.16	5.71	12.14	12.14 7.68	
1210	75	1151	18.12	5.71	6.68	7.61	
1220	80	1151	18.17	5.71	11.4	7.59	
1230	85	1148	18.10	5.69	12.6	7.59	
1240	90	1148	18.16	5.69	9.60	7.70	
1250	95	1151	18.19	5.69	12.4	7.81	
1300	100	1151	18.21	5.69	83.2	7.32	lowered pump 2 feet
1310	105	1153	18.21	5.68	14.2	6.87	

= TOTAL VOLUME REMOVED (gal.)

DEVELOPMENT METHOD: _____

NOTES:



GOLDER

WELL DEVELOPMENT FIELD RECORD

JOB NAME Mc Donough JOB NO. _____ WELL NO. B-90
 DEVELOPED BY Arthur D. Rosetti DATE OF INSTALL 12-11-19 SHEET 1 OF 2
 STARTED LEVEL 12-14-19 10:53:08 38 COMPLETED LEVEL 12-14-19 13:00
 W.L. BEFORE DEVEL. 1.18 DATE 12-14-19 TIME 10:30 AFTER DEVEL. NA, NA, NA
 WELL DEPTH: BEFORE DEVEL. 32.96 AFTER DEVEL. NA WELL DIA. (in) 2 1/2
 STANDING WATER COLUMN (FT.) NA STANDING WELL VOLUME NA gal.
 SCREEN LENGTH 10' DRILLING WATER LOSS NA gal.

DATE/TIME	VOLUME REMOVED (GALS)	FIELD PARAMETERS					REMARKS	
		SPEC. COND. (umhos/cm)	TEMP. (°F)	pH (s.u.)	MTL OTHER	D _{tw}		
12-14-19 0900	15	1233	18.17	5.86	36.2	10.22	~2.5 feet from bottom	
12-14-19 0910	20	1222	18.26	5.75	15.6	10.74		
0920	25	1220	18.25	5.70	18.5	10.53		
0930	30	1218	18.25	5.69	12.3	10.52		
0940	35	1215	18.26	5.67	8.78	10.50		
0950	40	1213	18.29	5.66	8.79	10.50		
1000	45	1214	18.29	5.65	10.85	10.50	moved to 5' from bottom	
1010	50	1164	18.26	5.74	29.71	9.92		
1020	52	1204	18.24	5.76	106.1	12.00		
1030	58	1214	18.26	5.65	48.7	11.08		
1040	64	1214	18.26	5.65	14.5	11.02		
1050	70	1209	18.22	5.66	11.1	10.57		
1100	76	1206	18.26	5.65	4.04	10.87		
1110	82	1203	18.30	5.63	7.36	10.97		
1120	90	1186	18.25	5.68	13.2	11.08		
1130	96	1173	18.30	5.63	15.5	11.05		
1140	102	1208	18.30	5.63	8.97	11.08		
1150	108	1204	18.29	5.63	9.01	11.08		
1200	114	1210	18.30	5.63	5.72	11.08		
1210	120	1207	18.31	5.64	5.89	11.08		
		= TOTAL VOLUME REMOVED (gal.)						

DEVELOPMENT METHOD: _____

NOTES:



WELL DEVELOPMENT FIELD RECORD

JOB NAME <u>McDonough</u>	JOB NO. <u>166849618</u>	WELL NO. <u>B-91</u>
DEVELOPED BY <u>Will Ballou, Jude Wagespack</u>	DATE OF INSTALL. <u>12-11-2019</u>	SHEET <u>1</u> OF <u>1</u>
STARTED LEVEL <u>12-13-19 / 0940</u>	COMPLETED LEVEL <u>/</u>	
W.L. BEFORE DEVEL. <u>3.58' 12-13 /</u>	AFTER DEVEL. <u>/ /</u>	
WELL DEPTH: BEFORE DEVEL. <u>35.25'</u>	AFTER DEVEL. <u>WELL DIA. (in) <u>2</u></u>	
STANDING WATER COLUMN (FT.) <u>31.67'</u>	STANDING WELL VOLUME <u>5.16</u> gal.	
SCREEN LENGTH <u>10'</u>	DRILLING WATER LOSS <u>-</u> gal.	

DATE/TIME	VOLUME REMOVED (GALS)	FIELD PARAMETERS					RATE (gal/min)	REMARKS	
		SPEC. COND. (umhos/cm)	TEMP. (°F)	pH (s.u.)	NTU OTHER				
0945									
12-13-19 0940	3.8	1267.3	17.91	5.97	>1000	0.75	8.91	DTL (FT)	
" 1015	26.3	1194.1	18.29	5.67	793	1.25	10.21		
" 1030	45.0	1230.9	18.31	5.76	913	1.25	15.71		
" 1040	82.5	1232.8	18.34	5.75	90.2	1.25	16.95		
" 11:30	120	1235.3	18.27	5.71	118	1.25	16.35		
" 12:00	157	1235.1	18.24	5.70	56.8	1.25	15.61		
" 12:15	176	1231.6	18.17	5.67	12.9	1.25	15.87		
" 1245	203	1234.3	18.34	5.63	67.9	1.25	17.21		
" 1300	221	1234.9	18.20	5.62	85.7	1.25	17.40		
" 1330	258	1263.3	17.10	5.70	43.2	1.25	17.71		
" 1345	275	1235.4	17.45	5.44	11.9	0.5	10.50		
" 1355	280	1237.5	17.85	5.43	9.81	0.5	8.41		
" 1405	285	1237.5	17.96	5.45	19.7	0.5	8.00		
" 1415	290	1235.1	17.94	5.44	16.6	0.5	7.80		
" 1425	295.4	1231.1	16.20	5.44	12.9	300 ml/min	4.76		
" 1435		1236.8	16.38	5.42	13.6	300 ml/min	4.21		
" 1440		1233.4	16.20	5.39	14.0	300 ml/min	4.20		
" 1445		1237.8	16.20	5.41	13.8	300 ml/min	4.25		
" 1450		Stop flow - flow test well						LWS	
" 1530		low flow test unsuccessful, continue dev. tomorrow							
		= TOTAL VOLUME REMOVED (gal.)							

DEVELOPMENT METHOD: Geotek Reclaimer 1.3, Heron Dipper T Instn SmartTrail, Kamotte 202 power, Honda generator, air compressor, surge well screen at different intervals by pump

NOTES: 0945: Pump 6" from bottom, 1015: move to 2' from bottom
 1100: move to 5' from bottom, 11:30 move to 7' from bottom
 00: move to 9' from bottom, 12:15 move to 2' from bottom
 move to 5' from bottom, 1330 PROBE FELL OUT OF SOLUTION
 own rate @ 1/2 gal/min Golder Associates @ 1420: flow rate 300 ml/min



GOLDER

WELL DEVELOPMENT FIELD RECORD

JOB NAME McDonough JOB NO. _____ WELL NO. B-91
 DEVELOPED BY Arthur O. Rosett DATE OF INSTALL. 12-14-19 SHEET 1 OF 2
 STARTED DEVEL. 12-14-19 / 1334 COMPLETED DEVEL. _____ / _____
 W.L. BEFORE DEVEL. 336 DATE 12-14-19 TIME 1330 AFTER DEVEL. _____ / _____
 WELL DEPTH: BEFORE DEVEL. _____ AFTER DEVEL. _____ WELL DIA. (In) _____
 STANDING WATER COLUMN (FT.) _____ STANDING WELL VOLUME _____ gal.
 SCREEN LENGTH 10' DRILLING WATER LOSS _____ gal.

DATE/TIME	VOLUME REMOVED (GALS)	FIELD PARAMETERS				REMARKS
		SPEC. COND. (umhos/cm)	TEMP. (°F)	pH (s.u.)	OTHER	
12-14-19 1500	54				7100	Downsizing for 84 min throughout well screen
1510	60	1206	18.47	5.42	51.2	11.75 @ 5' above bottom
1520	66	1206	18.44	5.41	37.7	11.75
1530	72	1206	18.36	5.41	41.5	11.75
1540	79	1206	18.36	5.40	26.5	11.75
1550	86	1206	18.35	5.40	19.5	11.75
1600	93	1206	18.34	5.40	14.9	11.75
1610	100	1206	18.35	5.39	11.9	11.85
1620	107	1205	18.38	5.39	9.57	11.95
1630	114	1207	18.37	5.39	7.07	12.06 started surging again
1640	120	1207	18.37	5.39	2254	11.95 Surging
1650	126	1203	18.35	5.41	2490	11.95
1700	132	1207	18.30	5.40		
		= TOTAL VOLUME REMOVED (gal)				

DEVELOPMENT METHOD: _____

NOTES:



WELL DEVELOPMENT FIELD RECORD

JOB NAME <u>McDonough</u> DEVELOPED BY <u>Arthur D. Rose #</u> STARTED DEVEL. <u>12-15-19</u> / <u>0930</u> DATE TIME W.L. BEFORE DEVEL. <u>336</u> / <u>12-15-19</u> / <u>0825</u> DEPTH DATE TIME WELL DEPTH: BEFORE DEVEL. _____ STANDING WATER COLUMN (FT.) _____ SCREEN LENGTH <u>10'</u>	JOB NO. _____ WELL NO. <u>B-91</u> DATE OF INSTALL. <u>12-11-19</u> SHEET <u>1</u> OF <u>2</u> COMPLETED DEVEL. <u>12-15-19</u> / <u>1659</u> DATE TIME AFTER DEVEL. <u>NA</u> / <u>NA</u> / <u>M</u> DEPTH DATE TIME AFTER DEVEL. <u>3520</u> / _____ / _____ WELL DIA. (In) <u>2"</u> STANDING WELL VOLUME <u>NA</u> gal. DRILLING WATER LOSS <u>NA</u> gal.
---	--

DATE/TIME	VOLUME REMOVED (GALS)	FIELD PARAMETERS					REMARKS	
		SPEC. COND. (umhos/cm)	TEMP. (°F)	pH (S.U.)	MTU OTHER			
							first few hours surged vigorously @ d. float high then purged from top down covering every 6" till bottom	
1220	138	1153	19.75	5.28	63.7	9.50		
1230	144	1154	18.62	5.27	42.1	9.5		
1240	150	1150	18.63	5.27	34.0	9.5		
1250	156	1177	19.62	5.28	49.1	9.5		
1300	162 162	1176	19.59	5.28	36.8	9.5		
1310	168	1178	18.62	5.28	19.8	9.5		
1320	174	1177	18.70	5.28	21.6	9.5		
1330	180	1177	18.56	5.28	11.5	9.55		
1340	186	1177	18.63	5.29	17.8	9.55		
1350	192	1176	18.58	5.29	24.4	9.55		
1400	198	1177	18.57	5.29	31.6	9.55		
1410	203	1176	18.61	5.29	18.7	9.55	lift by pump up 6"	
1420	209	1176	18.61	5.29	22.6	9.55 9.60		
1430	215	1176	18.60	5.30	39.7	9.65		
1440	222	1176	18.57	5.29	18.3	9.90		
1450	229	1176	18.55	5.29	24.4	10.3		
1500	236	1176	18.57	5.29	22.3	10.6		
1510	243	1177	18.53	5.29	27.7	10.8		
		= TOTAL VOLUME REMOVED (gal.)						

DEVELOPMENT METHOD: _____

NOTES:



GOLDER

WELL DEVELOPMENT FIELD RECORD

JOB NAME McDonough
 DEVELOPED BY JUDE WAGNER/PAK
 STARTED DEVEL. 12-16-19 10:35
DATE TIME
 W.L. BEFORE DEVEL. 4.58' 12-16-19 10:00
DEPTH DATE TIME
 WELL DEPTH: BEFORE DEVEL. 24.8'
 STANDING WATER COLUMN (FT.) 20.22'
 SCREEN LENGTH 10'

JOB NO. 166849618 WELL NO. B-92
 DATE OF INSTALL. 12-12-19 SHEET 1 OF 1
 COMPLETED DEVEL. 12-16-19 15:10
DATE TIME
 AFTER DEVEL. 915 12-16-19 15:10
DEPTH DATE TIME
 AFTER DEVEL. 24.84 WELL DIA. (In) 2"
 STANDING WELL VOLUME 3.3 gal.
 DRILLING WATER LOSS NA gal.

DATE/TIME	VOLUME REMOVED (GALS)	FIELD PARAMETERS				NTU OTHER	gal/min RATE	REMARKS DTW	
		SPEC. COND. (umhos/cm)	TEMP. (°F)	pH (s.u.)					
12-16-19 10:35	0					>1000	1/2 gpm/min	4.8'	
10:47	5					>1000	1/2	7.15'	
10:53	10					>1000	0.5	7.7'	
11:00	15	989.9	18.5	4.82		>1000	0.5	7.8'	
11:06	20	992.2	18.5	4.86		>1000	0.5	9.3'	
11:27	30.5	1004.7	18.5	4.85	>2000		0.5	9.6'	
11:55	44.5	1012.8	18.5	4.86	>100		0.5	9.2'	
12:20	57	1017.4	18.5	4.88	>100		0.5	7.7'	
12:27	60.5	1014.5	18.5	4.91	>100		0.5	7.8'	
12:34	64	1020.5	18.5	4.84	>100		0.5	9.2'	
12:48	71	1022.9	18.5	4.83	>100		0.5	9.4'	
1330 1400	100	1010	18.73	5.08	>100		0.6		
1400	120	969	18.52	4.87	>100		0.6	9.0	
1410	126	969	18.53	4.89	180		0.6	9.0	
1420	132	968	18.52	4.86	71.1		0.6	9.05	
1430	138	969	18.53	4.89	88.5		0.6	9.10	
1440	144	969	18.53	4.86	32.6		0.6	9.14	
1450	150	970	18.53	4.88	9.04		0.6	9.15	
1500	156	970	18.52	4.87	5.14		0.6	9.15	
1510	162	971	18.58	4.88	4.02		0.6	9.15	
	163	= TOTAL VOLUME REMOVED (gal.)							

DEVELOPMENT METHOD: _____

NOTES: 10:47: Pump 1' from bottom, surging 11:27: pump 2' from bot, surging
 11:55: pump 3' from bot, surging 12:34: 4' from bottom + surging



GOLDER

WELL DEVELOPMENT FIELD RECORD

JOB NAME	<u>Plant McDonough</u>	JOB NO.	<u>166849618</u>	WELL NO.	<u>B-93</u>
DEVELOPED BY	<u>JUDE WAGVESTACK</u>	DATE OF INSTALL.	<u>12-12-19</u>	SHEET	<u>1</u> OF <u>1</u>
STARTED DEVEL.	<u>12-16-19 14:58</u>	COMPLETED DEVEL.	<u>12-17-19 15:10</u>		
	DATE TIME		DATE TIME		
W.L. BEFORE DEVEL.	<u>6.85' 12-16 14:47</u>	AFTER DEVEL.	<u>15.10 12-17 15:10</u>		
	DEPTH DATE TIME		DEPTH DATE TIME		
WELL DEPTH: BEFORE DEVEL.	<u>29.30'</u>	AFTER DEVEL.	<u>29.00'</u>	WELL DIA. (in)	<u>2"</u>
STANDING WATER COLUMN (FT.)	<u>22.45' x 1.163</u>	STANDING WELL VOLUME	<u>3.66</u>		gal.
SCREEN LENGTH	<u>10'</u>	DRILLING WATER LOSS	<u>NA</u>		gal.

DATE/TIME	VOLUME REMOVED (GALS)	FIELD PARAMETERS				NTU OTHER	RATE (gal/min)	REMARKS	DTW (ft)
		SPEC. COND. (umhos/cm)	TEMP. (°F)	pH (s.u.)					
12-16-19 14:58	0				71000	0.75		6.85'	
15:20	5				>10000	0.75		24'	
15:55	8				71000	0.75		24'	
12-17-19 9:00	0					0.5		6.9'	
9:09	13	1093.2	17.54	6.15	71000	0.5		26'	
9:50	13	1102.4	18.73	5.98	71000	0.5 0.75		8.5'	
9:57	18	1114.5	18.79	6.15	>1000			26'	
10:40 10:35	18	1108.1	18.39	6.29	71000	0.75		7.6'	
12:08	18							8.3'	
12:57	23	1143.9	18.26	5.77	71000			11.25'	
13:55	28	1145.6	17.85	5.85	7.82			14.20'	
14:56	33	1149.0	17.94	5.76	2.75	400 mL/min		14.00'	
15:06		1149.0	17.92	5.75	3.07	400 mL/min		14.00'	
		= TOTAL VOLUME REMOVED (gal.)							

DEVELOPMENT METHOD: _____

NOTES: 14:58 - pump 6" from bottom, purging; well ran dry - stopped pumping to recharge 12-17-19 9:09 dry, recharging ^{+ 5 gals pumped} 12/17 12:08 Peristaltic pump at 5' from bottom

Product Name: Low-Flow System

Date: 2019-09-18 17:55:04

Project Information:

Operator Name T. Rose
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 597519
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type sampler pro
Tubing Type polyethylene
Tubing Diameter .170 in
Tubing Length 45 ft

Pump placement from TOC 39 ft

Well Information:

Well ID B-77
Well diameter 2 in
Well Total Depth 43.40 ft
Screen Length 10 ft
Depth to Water 33.17 ft

Pumping Information:

Final Pumping Rate 150 mL/min
Total System Volume 0.415854 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 17 in
Total Volume Pumped 11 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10	+/- 10
Last 5	17:11:28	2100.03	22.20	6.13	242.53	18.40	34.46	2.17	56.73
Last 5	17:16:28	2400.03	22.23	6.14	243.27	14.10	34.53	2.18	54.81
Last 5	17:21:28	2700.03	22.18	6.14	243.27	11.60	34.56	2.19	53.21
Last 5	17:26:28	3000.04	22.05	6.14	241.31	9.01	34.64	2.13	51.36
Last 5	17:31:28	3300.03	22.00	6.14	240.52	7.08	34.68	2.10	49.44
Variance 0			-0.05	0.00	0.01			0.02	-1.61
Variance 1			-0.14	0.01	-1.96			-0.06	-1.85
Variance 2			-0.05	-0.00	-0.80			-0.03	-1.92

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-23 12:23:58

Project Information:

Operator Name J. Quenneville
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 597519
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Reclaimer
Tubing Type polyethylene
Tubing Diameter .375 in
Tubing Length 15 ft

Pump placement from TOC 15 ft

Well Information:

Well ID B-78
Well diameter 2 in
Well Total Depth 25 ft
Screen Length 10 ft
Depth to Water 12.13 ft

Pumping Information:

Final Pumping Rate 1600 mL/min
Total System Volume 0.4157797 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 14.16 in
Total Volume Pumped 48 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10	+/- 10
Last 5	12:00:34	600.02	19.18	4.94	1066.59	2.00	11.81	2.64	269.48
Last 5	12:05:34	900.02	19.15	4.95	997.22	1.52	11.65	3.66	299.36
Last 5	12:10:34	1200.02	19.77	4.89	1127.44	1.74	11.01	0.32	310.11
Last 5	12:15:34	1500.01	19.77	4.90	1125.28	1.62	10.93	0.31	315.73
Last 5	12:20:34	1800.01	19.73	4.90	1125.69	1.37	10.95	0.31	322.73
Variance 0			0.62	-0.06	130.21			-3.35	10.75
Variance 1			-0.00	0.00	-2.15			-0.01	5.62
Variance 2			-0.04	0.01	0.40			-0.00	7.00

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-20 16:23:55

Project Information:

Operator Name T. Rose
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 597519
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Reclaimer
Tubing Type polyethylene
Tubing Diameter .375 in
Tubing Length 25 ft

Pump placement from TOC 25 ft

Well Information:

Well ID B-80
Well diameter 2 in
Well Total Depth 30.44 ft
Screen Length 10 ft
Depth to Water 14.84 ft

Pumping Information:

Final Pumping Rate 750 mL/min
Total System Volume 0.9751527 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 48 in
Total Volume Pumped 174 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10	+/- 10
Last 5	15:36:21	4200.02	21.28	5.72	1276.55	15.10	19.04	1.14	81.08
Last 5	15:56:21	5400.02	20.88	5.77	1349.31	--	--	1.13	81.49
Last 5	16:06:21	6000.02	20.78	5.63	1307.22	2.25	18.84	1.18	79.08
Last 5	16:11:28	6307.02	20.80	5.63	1320.02	--	--	1.13	77.78
Last 5	16:16:28	6607.02	20.71	5.64	1290.23	2.16	18.84	1.20	76.89
Variance 0			-0.10	-0.14	-42.10			0.04	-2.41
Variance 1			0.01	-0.01	12.80			-0.04	-1.30
Variance 2			-0.08	0.01	-29.79			0.06	-0.88

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-21 13:11:34

Project Information:

Operator Name T. Rose
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 597519
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Reclaimer
Tubing Type polyethylene
Tubing Diameter .375 in
Tubing Length 46 ft

Pump placement from TOC 46 ft

Well Information:

Well ID B-82
Well diameter 2 in
Well Total Depth 50.45 ft
Screen Length 10 ft
Depth to Water 28.93 ft

Pumping Information:

Final Pumping Rate 750 mL/min
Total System Volume 1.409526 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 87.48 in
Total Volume Pumped 143 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10	+/- 10
Last 5	12:45:39	900.03	21.46	6.02	765.47	--	--	2.84	70.79
Last 5	12:50:39	1200.02	21.55	6.02	752.64	5.39	36.82	3.35	69.25
Last 5	12:55:39	1500.02	22.00	6.05	736.18	--	--	3.82	68.00
Last 5	13:00:39	1800.02	22.06	6.05	751.62	5.51	36.22	3.73	67.43
Last 5	13:05:39	2100.02	23.05	6.07	750.90	--	--	3.89	65.81
Variance 0			0.45	0.03	-16.46			0.47	-1.24
Variance 1			0.06	0.00	15.44			-0.09	-0.57
Variance 2			0.98	0.02	-0.72			0.16	-1.62

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-04 15:14:18

Project Information:

Operator Name Y. Soo
Company Name Golder
Project Name 166849618
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 364455
Turbidity Make/Model LaMotte 2020

Pump Information:

Pump Model/Type Reclaimer
Tubing Type polyethylene
Tubing Diameter .375 in
Tubing Length 42 ft

Pump placement from TOC 42 ft

Well Information:

Well ID B-83
Well diameter 2 in
Well Total Depth 48.84 ft
Screen Length 10 ft
Depth to Water 32.4 ft

Pumping Information:

Final Pumping Rate 220 mL/min
Total System Volume 0.09 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 4.8 in
Total Volume Pumped 356 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 0.3	+/- 10
Last 5	14:41:31	300.10	24.35	5.53	373.76	11.67	32.70	0.26	51.30
Last 5	14:46:31	600.03	24.31	5.53	378.01	10.60	32.80	0.22	53.66
Last 5	14:51:31	900.03	24.49	5.52	378.39	8.20	32.80	0.21	55.23
Last 5	14:56:31	1200.03	24.31	5.53	376.46	9.08	32.80	0.19	57.52
Last 5	15:01:31	1500.03	24.94	5.53	378.30	8.82	32.80	0.19	58.71
Variance 0			0.18	-0.00	0.38			-0.01	1.57
Variance 1			-0.18	0.01	-1.92			-0.01	2.29
Variance 2			0.63	-0.00	1.83			-0.01	1.18

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-04 16:57:25

Project Information:

Operator Name J. Quenneville
Company Name Golder
Project Name 166849618
Site Name McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 465016
Turbidity Make/Model LaMotte 2020

Pump Information:

Pump Model/Type Reclaimer
Tubing Type polyethylene
Tubing Diameter .375 in
Tubing Length 44 ft

Pump placement from TOC 44 ft

Well Information:

Well ID B-84
Well diameter 2 in
Well Total Depth 49.42 ft
Screen Length 10 ft
Depth to Water 32.95 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.09 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 72.6 in
Total Volume Pumped 150.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 0.3	+/- 10
Last 5	16:35:48	300.09	25.60	5.91	695.00	11.10	40.00	0.50	58.97
Last 5	16:40:48	600.02	25.32	5.83	704.11	9.85	39.40	0.37	58.03
Last 5	16:50:48	1200.02	24.46	5.85	695.67	9.90	39.89	0.44	60.11
Last 5	16:55:48	1500.02	24.01	5.85	695.31	9.58	39.00	0.50	62.80
Last 5									
Variance 0			-0.27	-0.08	9.11			-0.13	-0.93
Variance 1			-0.86	0.02	-8.44			0.06	2.08
Variance 2			-0.45	0.00	-0.36			0.06	2.69

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-11-20 16:50:52

Project Information:

Operator Name Yong Cheng Soo
Company Name Golder
Project Name Plant McDonough
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 613229
Turbidity Make/Model LaMotte 2020

Pump Information:

Pump Model/Type Alexis
Tubing Type polyethylene
Tubing Diameter 0.5 in
Tubing Length 22.71 ft

Pump placement from TOC 22.71 ft

Well Information:

Well ID B-85
Well diameter 2 in
Well Total Depth 27.71 ft
Screen Length 10 ft
Depth to Water 6.44 ft

Pumping Information:

Final Pumping Rate 500 mL/min
Total System Volume 0.9394404 L
Calculated Sample Rate 300 sec
Stabilization Drawdown -23.3 in
Total Volume Pumped 479 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 10
Last 5	16:23:13	2700.04	18.45	5.39	1166.28	7.08	4.69	0.17	41.09
Last 5	16:28:13	3000.04	18.44	5.40	1169.04	7.08	4.77	0.16	39.21
Last 5	16:33:13	3300.04	18.41	5.38	1168.52	3.47	4.64	0.13	37.11
Last 5	16:38:13	3600.04	18.40	5.37	1166.56	2.50	4.55	0.13	35.66
Last 5	16:43:13	3900.04	18.39	5.38	1167.20	4.83	4.50	0.12	33.98
Variance 0			-0.03	-0.02	-0.52			-0.02	-2.10
Variance 1			-0.01	-0.01	-1.96			-0.01	-1.45
Variance 2			-0.01	0.00	0.64			-0.00	-1.68

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-11-20 15:29:26

Project Information:

Operator Name S. Brodie
Company Name Golder
Project Name Plant McDonough
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 364452
Turbidity Make/Model LaMotte 2020

Pump Information:

Pump Model/Type Reclaimer
Tubing Type polyethylene
Tubing Diameter .5 in
Tubing Length 30 ft

Pump placement from TOC 30 ft

Well Information:

Well ID B-86
Well diameter 2 in
Well Total Depth 35.83 ft
Screen Length 10 ft
Depth to Water 4.51 ft

Pumping Information:

Final Pumping Rate 500 mL/min
Total System Volume 1.248328 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 10.44 in
Total Volume Pumped 1197.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	15:06:45	300.09	18.83	5.40	1121.51	7.72	5.39	0.75	79.46
Last 5	15:11:45	600.03	18.88	5.41	1122.52	4.57	5.38	0.60	77.97
Last 5	15:16:45	900.03	18.81	5.41	1122.14	4.76	5.35	0.53	76.88
Last 5	15:21:45	1200.03	18.75	5.42	1122.55	4.38	5.38	0.49	76.11
Last 5									
Variance 0			0.05	0.00	1.01			-0.15	-1.49
Variance 1			-0.07	0.01	-0.38			-0.07	-1.09
Variance 2			-0.07	0.01	0.41			-0.04	-0.78

Notes

Low flow, not sampled

Grab Samples

Product Name: Low-Flow System

Date: 2019-11-21 16:29:19

Project Information:

Operator Name William Ballow
Company Name Golder
Project Name Plant McDonough
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 613229
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type GeoTech Reclaimer
Tubing Type Polyethylene
Tubing Diameter 0.5 in
Tubing Length 40 ft

Pump placement from TOC 40 ft

Well Information:

Well ID B-87
Well diameter 2 in
Well Total Depth 45.04 ft
Screen Length 10 ft
Depth to Water 16.51 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 2.634437 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 28.4 in
Total Volume Pumped 582.54 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 3%	+/- 10		+/- 0.3	+/- 10
Last 5	16:06:33	1800.03	17.66	5.86	2087.32	4.25	18.98	0.75	3.98
Last 5	16:11:34	2101.03	17.65	5.86	2087.30	3.37	19.01	0.55	-2.38
Last 5	16:16:34	2401.06	17.66	5.85	2086.14	2.26	18.91	0.08	-12.15
Last 5	16:21:34	2701.06	17.69	5.85	2084.48	2.75	18.89	0.07	-19.78
Last 5	16:26:34	3001.04	17.71	5.85	2083.82	1.81	18.88	0.07	-26.74
Variance 0			0.01	-0.00	-1.16			-0.47	-9.77
Variance 1			0.03	-0.01	-1.66			-0.01	-7.63
Variance 2			0.01	0.01	-0.65			-0.00	-6.96

Notes

Post development test only. No samples collected
WL came up during purge to recharge post development

Grab Samples

Product Name: Low-Flow System

Date: 2019-11-21 16:47:08

Project Information:

Operator Name S. Brodie
Company Name Golder Associates Inc
Project Name Plant McDonough
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 364452
Turbidity Make/Model LaMotte 2020

Pump Information:

Pump Model/Type geotech reclaimer
Tubing Type polyethylene
Tubing Diameter 0.5 in
Tubing Length 74.5 ft

Pump placement from TOC 74.5 ft

Well Information:

Well ID B-88
Well diameter 2 in
Well Total Depth 75.05 ft
Screen Length 10 ft
Depth to Water 32.65 ft

Pumping Information:

Final Pumping Rate 280 mL/min
Total System Volume 2.966514 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 4.2 in
Total Volume Pumped 1079.52 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 10
Last 5	16:24:29	3000.95	17.77	5.52	1326.67	5.02	32.98	0.34	73.03
Last 5	16:29:29	3300.94	17.72	5.53	1324.91	8.35	32.98	0.32	71.75
Last 5	16:34:29	3600.93	17.72	5.54	1322.51	4.15	33.00	0.33	70.57
Last 5	16:39:29	3900.92	17.69	5.54	1320.59	4.26	33.00	0.36	69.70
Last 5	16:44:29	4200.92	17.72	5.55	1320.06	3.27	33.00	0.41	69.43
Variance 0			-0.00	0.01	-2.40			0.01	-1.18
Variance 1			-0.04	0.01	-1.92			0.03	-0.87
Variance 2			0.03	0.00	-0.53			0.05	-0.27

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-11-22 12:30:42

Project Information:

Operator Name S. Brodie
Company Name Golder
Project Name Plant McDonough
Site Name Plant McDonough
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 613229
Turbidity Make/Model LaMotte 2020

Pump Information:

Pump Model/Type GeoTech Reclaimer
Tubing Type polyethylene
Tubing Diameter 0.5 in
Tubing Length 44 ft

Pump placement from TOC 44 ft

Well Information:

Well ID B-89
Well diameter 2 in
Well Total Depth 48.89 ft
Screen Length 10 ft
Depth to Water 23.21ft

Pumping Information:

Final Pumping Rate 240 mL/min
Total System Volume 1.788881 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 8.88 in
Total Volume Pumped 693.31 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 10
Last 5	12:07:37	600.03	19.54	5.84	492.22	0.95	24.04	3.41	57.69
Last 5	12:12:37	900.03	19.77	5.80	476.60	0.76	24.03	3.05	55.44
Last 5	12:17:37	1200.04	19.99	5.76	462.36	0.63	23.98	2.78	53.20
Last 5	12:22:37	1500.04	19.90	5.72	453.33	0.47	23.95	2.58	53.21
Last 5	12:27:37	1800.04	20.14	5.73	457.71	0.38	23.95	2.44	51.50
Variance 0			0.22	-0.04	-14.24			-0.27	-2.24
Variance 1			-0.09	-0.04	-9.02			-0.20	0.00
Variance 2			0.24	0.00	4.38			-0.14	-1.70

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-12-14 12:44:20

Project Information:

Operator Name Arthur Rose
Company Name Golder
Project Name McDonough
Site Name Southern Company
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 643819
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type reclaimer
Tubing Type LDPE
Tubing Diameter .375 in
Tubing Length 27 ft

Pump placement from TOC 27 ft

Well Information:

Well ID B-90
Well diameter 2 in
Well Total Depth 32.96 ft
Screen Length 10 ft
Depth to Water 1.18 ft

Pumping Information:

Final Pumping Rate 700 mL/min
Total System Volume 1.133746 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 119 in
Total Volume Pumped 522 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 3%	+/- 10		+/- 0.3	+/- 10
Last 5	12:21:45	12299.91	18.38	5.63	1208.70	6.11	11.08	0.50	86.73
Last 5	12:26:45	12599.91	18.30	5.64	1204.92	5.24	11.08	0.47	86.46
Last 5	12:31:45	12899.91	18.29	5.63	1200.34	6.79	11.08	0.63	86.43
Last 5	12:36:45	13199.90	18.30	5.64	1206.72	6.15	11.08	0.54	86.29
Last 5	12:41:45	13499.90	18.34	5.63	1207.67	4.29	11.08	0.45	86.49
Variance 0			-0.00	-0.01	-4.57			0.16	-0.03
Variance 1			0.01	0.01	6.38			-0.09	-0.14
Variance 2			0.03	-0.01	0.95			-0.09	0.20

Notes

Development

Product Name: Low-Flow System

Date: 2019-12-15 16:52:20

Project Information:

Operator Name Arthur Rose
Company Name Golder
Project Name McDonough
Site Name Southern Company
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 643819
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type reclaimer
Tubing Type LDPE
Tubing Diameter .375 in
Tubing Length 27 ft

Pump placement from TOC 27 ft

Well Information:

Well ID B-91
Well diameter 2 in
Well Total Depth 35.20 ft
Screen Length 10 ft
Depth to Water 3.36 ft

Pumping Information:

Final Pumping Rate 600 mL/min
Total System Volume 1.133746 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 92 in
Total Volume Pumped 1185 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 3%	+/- 10		+/- 0.3	+/- 10
Last 5	16:30:16	15299.88	18.39	5.30	1177.75	7.58	11.05	0.78	121.27
Last 5	16:35:16	15599.88	18.39	5.30	1175.36	9.88	11.05	0.69	121.22
Last 5	16:40:16	15899.88	18.40	5.30	1176.94	7.95	11.05	0.67	122.89
Last 5	16:45:16	16199.87	18.39	5.31	1178.25	6.44	11.05	0.73	123.24
Last 5	16:50:16	16499.87	18.40	5.30	1175.92	6.38	11.05	0.68	124.28
Variance 0			0.01	-0.01	1.58			-0.02	1.67
Variance 1			-0.01	0.01	1.31			0.07	0.35
Variance 2			0.01	-0.00	-2.33			-0.05	1.04

Notes

Development

Product Name: Low-Flow System

Date: 2019-12-16 15:44:52

Project Information:

Operator Name Arthur Rose
Company Name Golder
Project Name McDonough
Site Name Southern Company
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 643819
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type reclaimer
Tubing Type LDPE
Tubing Diameter .375 in
Tubing Length 20 ft

Pump placement from TOC 20 ft

Well Information:

Well ID B-92
Well diameter 2 in
Well Total Depth 24.8 ft
Screen Length 10 ft
Depth to Water 4.58 ft

Pumping Information:

Final Pumping Rate 600 mL/min
Total System Volume 0.9165594 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 55 in
Total Volume Pumped 613 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 3%	+/- 10		+/- 0.3	+/- 10
Last 5	14:50:54	2699.99	18.53	4.88	970.19	9.04	9.15	0.57	294.21
Last 5	14:55:54	2999.97	18.53	4.88	970.21	10.45	9.15	0.63	342.52
Last 5	15:00:54	3299.97	18.52	4.87	970.79	5.14	9.15	0.66	335.80
Last 5	15:05:54	3599.96	18.52	4.87	970.69	5.24	9.15	0.61	333.77
Last 5	15:10:54	3900.00	18.53	4.88	971.63	4.02	9.15	0.58	341.12
Variance 0			-0.00	-0.01	0.59			0.03	-6.72
Variance 1			0.00	-0.00	-0.11			-0.05	-2.04
Variance 2			0.01	0.01	0.94			-0.03	7.36

Notes

Development



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