Georgia Power Company
FORMER PLANT ARKWRIGHT
CLOSED ASH POND No. 2 DRY ASH STOCKPILE

PERMIT #: 011-031D(LI)

Bibb County

2019 SEMIANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

Atlantic Coast Consulting, Inc.

CERTIFICATION STATEMENT

This *2019 Semiannual Groundwater Monitoring Report*, Georgia Power Company – Former Plant Arkwright – Ash Pond 2 Dry Ash Stockpile (AP-2DAS) has been prepared in compliance with the Georgia Environmental Protection Division Rules for Solid Waste Management 391-3-4-.10 and 391-3-4-.14 by a qualified groundwater scientist or engineer with Atlantic Coast Consulting, Inc. (ACC).

ATLANTIC COAST CONSULTING, INC.

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1.0 INTRODUCTION

In accordance with the Georgia Environmental Protection Division (GA EPD) Rules of Solid Waste Management 391-3-4-.10(6)(a)-(c) and 391-3-4-.14, Atlantic Coast Consulting, Inc. (ACC) has prepared this *2019 Semiannual Groundwater Monitoring Report* to document groundwater monitoring activities conducted at Georgia Power Company's (GPC's) former Plant Arkwright – Ash Pond No. 2 Dry Ash Stockpile (AP-2DAS) (Site). GA EPD rule 391-3-4-.10(6)(a) incorporates by reference the United States Environmental Protection Agency (US EPA) Coal Combustion Residuals (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.

Groundwater monitoring and reporting for Plant Arkwright AP-2DAS are performed in accordance with the monitoring requirements of §§ 257.90 through 257.95 as referenced in the Georgia EPD Rules 391-3-4-.10(6)(a)-(c), and in accordance with EPD Rule 391-3-4-.14. This report documents the activities completed during the second half of 2019. Two monitoring events were conducted during this monitoring period: (1) an initial assessment monitoring event in August 2019 as a result of statistical exceedances of Appendix III parameters during the first detection monitoring event, and (2) a subsequent assessment event conducted in October 2019 for Appendix I and II metals required by the existing state permit, and Appendix IV parameters detected during the August 2019 monitoring event.

1.1 Site Description and Background

The Site is located in Bibb County, Georgia, approximately 6 miles northwest of the city of Macon and 2 miles east of the city of Arkwright. The CCR unit area comprises approximately 11 acres. The disposal facility was formally closed in 2010 with the issuance of a closure certificate by GA EPD. Post closure care has been performed in accordance with the permit following closure. Figure 1, Site Location Map, depicts the site location relative to the surrounding area.

Plant Arkwright was retired in 2002 and decommissioned in 2003. The CCR unit was closed in 2010 in accordance with the solid waste landfill regulations specified by GA EPD 391-3-4, in effect at the time of its closure. A closure certificate was issued by GA EPD for AP-2DAS on June 30, 2010. The Closure Certificate initiated the post-closure care period for the CCR unit.

AP-2DAS is exempt from the requirements in 40 CFR Part 257 Subpart D – Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments in accordance with § 257.50(d) and (e), which states that the subpart does not apply to CCR landfills that have ceased receiving CCR prior to October 19, 2015. These CCR units are, however, subject to the requirements of relevant portions of Georgia EPD 391-3-4-.10. The CCR unit referred to as AP-2DAS and is defined as an Inactive CCR Landfill per Georgia Solid Waste Management Rule 391-3-4-.10(2)(a)(3).

Semiannual groundwater monitoring at AP-2DAS is performed for an approved list of analytes in accordance with the post-closure care period requirements of GA EPD Permit #: 011-031D(LI). A minor modification approved by GA EPD on August 9, 2017 includes the Appendix III and IV sample parameters to the groundwater monitoring plan. To meet the new requirements of GA EPD rule 391-3-4-.10, a permit application package for the Site was submitted to GA EPD in November 2018 and is currently under review by EPD.

1.2 Regional Geology and Hydrogeologic Setting

The Site is located in northern Bibb County in the Washington Slope District of the Piedmont Physiographic Province. The topography of this portion of the Piedmont consists of rolling hills with a maximum elevation approximately 700 feet above sea level at the northern margin located to the south of Atlanta and Athens to approximately 300 feet above sea level at its southern limit (slightly south of the site). Streams have adjusted course following the structure of underlying crystalline rocks eastward toward the Ocmulgee River. Ultimately, all area surface water flow is directed toward the Ocmulgee River. Owing to the variety of rocks underlying the Piedmont, the soils differ from place to place, but in general they are deep red and reasonably fertile. Regionally, igneous and metamorphic rocks are exposed in the extreme northern part of Bibb County, where the Site is located. Many of these rocks are granitic, being true granite, biotite- granite gneiss, or a granite component in a diorite injection complex. All these rocks are highly weathered and where exposed are generally soft and friable (LeGrand, 1962). The site area is generally composed of fine to medium sandy silt to silty sand underlain by silty sand saprolite. Borings performed in the earlier site investigations indicate extremely weathered quartz-feldspathic gneiss, hornblende gneiss and schist.

1.2.1 Site Geologic and Hydrogeologic Setting

The general geology beneath AP-2DAS consists of clays, silty and sandy clays, silty sands, sandy silts, and minor gravel at depth, underlain by silty sand saprolite and bedrock. Historic borings indicate that bedrock occurs at depths ranging from approximately 27 feet to 62 feet below grade, and consists of weathered quartzofeldspathic gneiss, hornblende gneiss, and schist. Boring logs also indicate a relatively thin zone of partially weathered rock (PWR) above consolidated bedrock, the thickness of which can range from 1 to 4 feet in the southern and eastern portions of the site, and up to 14 feet in the northeastern portion of the site. Slug testing data from the site reflect a range of hydraulic conductivities from 10^{-3} to 10^{-4} centimeters per second. Groundwater level monitoring data from the site show stable water level trends and the potentiometric maps reflect groundwater flowing to the south across AP-2DAS.

1.3 Groundwater Monitoring Well Network and CCR Unit Description

As noted above, AP-2DAS closed in 2010. A groundwater monitoring plan was approved in 2010. The GA EPD-approved detection groundwater monitoring network includes 3 monitoring wells: upgradient wells GWA-19 and GWA-20, and downgradient well GWC-21. Wells were located to serve as upgradient and downgradient monitoring points based on groundwater flow direction (Table 1A, Monitoring Network Well Summary, and Table 1B, Non-Network Well Summary). Figure 2, Well Location Map, shows the monitoring well locations. Groundwater monitoring wells are designed to monitor the uppermost water-bearing zone. The existing groundwater monitoring network was included in the 2008 Design and Operation Plans approved by GA EPD in 2010. Two additional groundwater monitoring wells, GWC-22 and GWC-23 were installed in late 2019. These wells will be incorporated into the groundwater monitoring network upon EPD approval a permit minor modification.

2.0 GROUNDWATER MONITORING ACTIVITIES

The following describes monitoring-related activities performed during the first and second assessment monitoring events during the second half of the 2019 calendar year. Groundwater

sampling was performed in accordance with § 257.93. Samples were collected from each of the monitoring wells in the monitoring system (Table 1A).

Based on results of the March 2019 sampling event, assessment monitoring was initiated under EPD Rule under 391-3-4-.10(6) at the site. Table 2, Groundwater Sampling Event Summary, presents a summary of groundwater sampling events completed at the Site during the second half of 2019. Groundwater events were conducted at the Site during August 2019 and October 2019. During the initial assessment event in August 2019, groundwater samples were collected and analyzed for the full suite of Appendix IV constituents to meet the requirements of § 257.95(b). During the subsequent semiannual assessment monitoring event in October 2019 groundwater samples were collected for (1) Appendix III constituents, (2) the Appendix IV constituents detected during the August event, and (3) the state-specific list of Appendix I metals specified in the permit

2.1 Monitoring Well Installation/Maintenance

Monitoring well-related activities were limited to visual inspection of well conditions prior to sampling, recording the site conditions, and performing exterior maintenance to provide safe access for sampling.

In November 2019, two wells (AMW-1 and AMW-2) were installed to further characterize groundwater conditions in the vicinity of GWC-21. Two additional wells, GWC-22 and GWC-23, were installed and are proposed for incorporation into the monitoring network. Installation of these wells will be documented separately in a permit minor modification. Installation details for all locations are provided in Appendix A, Well Installation Reports.

2.2 Initial Assessment Monitoring

Based on results presented in the *2019 First Semiannual Groundwater Monitoring Report*, GPC has initiated an assessment monitoring program. A notice of assessment monitoring was placed in the operation record on November 13, 2019. Monitoring wells were sampled for Appendix IV parameters in August 2019. Based on these results, the monitoring wells were sampled for all Appendix III and detected Appendix IV parameters during the initial assessment monitoring event of October 2019.

3.0 SAMPLE METHODOLOGY AND ANALYSIS

The following sections describe the methods used to conduct groundwater monitoring at AP-2DAS.

3.1 Groundwater Flow Direction, Gradient, and Velocity

Prior to each sampling event, groundwater elevations were recorded from the groundwater monitoring well network at the Site. Groundwater elevations recorded during the monitoring events are summarized in Table 4A and 4B, Summary of Groundwater Elevations – August 2019 and October 2019, respectively. Groundwater elevation data was used to develop Figure 3, October 2019 Water Table Contour Map. The general direction of groundwater flow across the site is towards the south. The groundwater flow pattern observed during the October 2019 monitoring event is consistent with historical patterns.

The groundwater flow velocity at Plant Arkwright was calculated using a derivation of Darcy's Law.

Specifically:

Equation

$$v = \frac{K\,(dh/dl)}{P_e}$$ where: v = ground water velocity
K = hydraulic conductivity
dh/dl = hydraulic gradient
P_e = effective porosity

The general groundwater flow velocity was calculated for the site based on hydraulic gradients, average permeability based on previous slug test data, and an estimated effective porosity of 0.20 (based on a review of several sources, including Driscoll, 1986; US EPA, 1989; Freeze and Cherry, 1979). The general groundwater flow velocity calculation is presented in Table 5, Groundwater Flow Velocity Calculations. The general groundwater flow velocity was calculated to be 0.26 feet per day or 93.2 feet per year.

3.2 Groundwater Sampling

Groundwater samples were collected using low-flow sampling procedures. Purging and sampling was performed using a dedicated bladder pump in each well. All non-disposable equipment was decontaminated before use and between well locations.

Monitoring wells were purged and sampled using low-flow sampling procedures. A SmarTroll (In-Situ field instrument) was used to monitor and record field water quality parameters (pH, conductivity, oxidation-reduction potential, dissolved oxygen, and temperature) during well purging prior to sampling. Turbidity was measured using a Hach 2100Q portable turbidimeter. Groundwater samples were collected when the following stabilization criteria were met:

- ± 0.1 standard units for pH
- ± 5% for specific conductance
- ± 10% for Dissolved Oxygen (DO) where DO > 0.5 milligrams per liter (mg/L). No criterion applies if DO < 0.5 mg/L.
- Turbidity measurements less than 10 nephelometric turbidity units (NTU)

Once stabilization was achieved, samples were collected directly into appropriately preserved laboratory-supplied sample containers. Sample bottles were placed in ice-packed coolers and submitted to TestAmerica Laboratories, Inc. (TestAmerica) of Pittsburgh, Pennsylvania, and St. Louis, Missouri following chain-of-custody protocol. Stabilization logs for each well during each monitoring event are included in Appendix B, Laboratory Analytical Data and Field Summary Reports.

3.3 Laboratory Analyses

Groundwater samples were collected during two groundwater monitoring events in the second half of 2019. During the August 2019 sampling event, wells were sampled and analyzed for Appendix IV monitoring parameters pursuant to GA EPD rule 391-3-4-.10(6)(a) and 40 CFR § 257.95(b). Groundwater samples collected during the subsequent semiannual event in October 2019 were analyzed for Appendix III and those Appendix IV parameters detected above the laboratory method detection limit (MDL) during the August event in accordance with 40 CFR § 257.95(d). Parameters not detected in the August event above the laboratory MDL included: antimony, beryllium, cadmium, lead, mercury, molybdenum, and thallium. Analytical methods used for groundwater monitoring parameters are provided in laboratory reports in Appendix B.

Analytical data collected in monitoring events from the second half of 2019 (August 2019 and October 2019) are summarized in Table 6A, Summary of Groundwater Analytical Data – August 2019, and Table 6B, Summary of Groundwater Analytical Data – October 2019, respectively.

Laboratory analyses were performed by TestAmerica. TestAmerica is accredited by the National Environmental Laboratory Accreditation Program (NELAP) and maintains a NELAP certification for all parameters analyzed for this project. In addition, TestAmerica is certified to perform analysis by the State of Georgia. Laboratory reports and chain-of-custody records for the monitoring events are presented in Appendix B.

3.4 Quality Assurance and Quality Control

During each sampling event, quality assurance/quality control (QA/QC) samples are collected at a rate of one QA/QC sample per every 10 groundwater assessment samples. Equipment blanks (where non-dedicated sampling equipment is used) and duplicate samples were collected during each sampling event. QA/QC sample data were evaluated during data validation and are included in Appendix B.

Groundwater quality data in this report was validated in accordance with US EPA guidance (US EPA, 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, post digestions spikes, laboratory and field duplicate RPDs, field and equipment blanks, and reporting limits. Where appropriate, validation qualifiers and flags are applied to the data using US EPA procedures as guidance (US EPA, 2017).

Values followed by a "J" flag indicate that the value is an estimated analyte concentration detected between the method detection limit (MDL) and the laboratory reporting limit (PQL). 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 groundwater monitoring data was performed on samples collected from the GA EPD-approved groundwater monitoring network and following the appropriate method. The statistical method used at the site was developed by Groundwater Stats Consulting, LLC (GSC), using methodology presented in *Statistical Analysis of Groundwater Data at RCRA Facilities, Unified Guidance*, March 2009, US EPA 530/ R-09-007 (US EPA, 2009).

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 October semiannual 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 Methods

All screened historical background data through August 2018 were used to construct statistical limits for the EPD permit-required metals. Sanitas groundwater statistical software was used to perform the statistical analyses. Sanitas is a decision support software package that incorporates the statistical tests required of Subtitle C and D facilities by US EPA regulations.

4.1.1 Appendix III Constituents

Statistical tests used to evaluate the groundwater monitoring data consist of interwell prediction limits combined with a 1-of-2 verification resample plan for Appendix III parameters. Interwell prediction limits pool upgradient well data to establish a background limit for an individual constituent, and the most recent sample from each downgradient well is compared to the same limit for each parameter. If the most recent sample exceeds its background statistical limit, an initial statistically significant increase (SSI) is identified. A summary of the statistical methodology used at the Site for routine groundwater monitoring is provided in Table 7, Summary of Statistical Methods.

4.1.2 Appendix I Metals

Statistical tests used to evaluate the groundwater monitoring data consist of interwell prediction limits combined with a 1-of-2 verification resample plan for all required metals. The current permit also requires monitoring of chloride and sulfate, however these two analytes are also included in Appendix III and are therefore analyzed as described in Section 4.1.1. Interwell prediction limits pool upgradient well data to establish a background limit for an individual constituent, and the most recent sample from each downgradient well is compared to the same limit for each parameter. If the most recent sample exceeds its statistical limit, an initial statistically significant increase (SSI) is identified. Table 7 includes a summary of the metals included in the EPD permit and the statistical method.

4.2 Appendix III Statistical Analyses Results

Analytical data from the October 2019 monitoring event at AP-2DAS was statistically analyzed in accordance with the statistical methods. Resampling to confirm SSIs was not performed; therefore, initial SSIs are treated as verified. Wells and analytes with all data below the reporting limit do not require statistical analysis. A summary of wells exhibiting 100% non-detects is included in Appendix C, Statistical Analyses. The statistical analysis and comparison to prediction limits are included as Appendix C. Based on review of the Appendix III statistical analyses, there are SSIs for boron, calcium, pH, sulfate, and TDS at GWC-21.

Appendix III constituents have not returned to background levels and assessment monitoring should continue pursuant to 40 CFR § 257.95(f). Statistical analysis of the Appendix IV assessment monitoring results for the October 2019 sampling event will be completed in 2020 following the requirements of 40 CFR 257.95(d).

4.3 Appendix IV Statistical Analyses Results

Pursuant to §257.95, 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 Semiannual Groundwater Monitoring Report, due August 1, 2020.

4.4 Appendix I Statistical Analyses Results

Analytes required by the existing state permit were analyzed during this event. Wells and analytes with all data below the reporting limit do not require statistical analysis. A summary of wells exhibiting 100% non-detects is included in Appendix C.

Concentrations of target metals were within their interwell prediction limits during this sampling event. Sulfate and chloride are required by the existing permit and are included in Appendix III. As noted in Section 4.2.1, the concentration of sulfate is an SSI, but chloride is not. The sulfate SSI is consistent with historical results (i.e., the concentration is statistically higher than the two upgradient wells). However, the concentration is within the background range reported for upgradient wells at the adjacently located AP-3.

5.0 MONITORING PROGRAM STATUS

In accordance with 40 CFR § 257.94(e), an assessment monitoring program was initiated in 2019 for AP-2DAS. Similar SSIs of Appendix III constituents were detected in the October 2019 semiannual event. Pursuant to §257.94(e)(1), GPC will continue assessment monitoring.

6.0 CONCLUSIONS AND FUTURE ACTIONS

Statistical evaluations of the groundwater monitoring data for Plant Arkwright AP-2DAS identified SSIs of Appendix III groundwater monitoring constituents. GPC has initiated assessment monitoring pursuant to §257.95. During the next semiannual reporting period of 2020, GPC will establish groundwater protection standards for Appendix IV constituents and complete statistical analysis 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

Table 1A
Monitoring Network Well Summary

Well	Installation Date (mm/dd/yyyy)	Bottom Depth (ft BTOC)	Bottom Elevation (ft MSL)	Depth to Top of Screen (ft BTOC)	Top of Screen Elevation (ft MSL)	Purpose
GWA-19	12/18/2008	52.75	290.73	42.75	300.73	Upgradient
GWA-20	12/18/2008	37.65	293.83	27.65	303.83	Upgradient
GWC-21	12/18/2008	27.26	282.14	17.26	292.14	Downgradient
GWC-22	11/19/2019	27.78	282.40	12.75	297.43	Downgradient
GWC-23	11/20/2019	27.21	280.58	18.01	289.78	Downgradient

Notes:
1. ft BTOC indicates feet below top of casing.
2. ft MSL indicates feet mean sea level.

Table 1B
Non-Network Well Summary

Well	Installation Date (mm/dd/yyyy)	Bottom Depth (ft BTOC)	Bottom Elevation (ft MSL)	Depth to Top of Screen (ft BTOC)	Top of Screen Elevation (ft MSL)	Purpose
AMW-1	11/20/2019	45.33	263.34	8.29	300.38	Downgradient
AMW-2	11/20/2019	24.80	283.72	15.05	293.47	Downgradient

Notes:
1. ft BTOC indicates feet below top of casing.
2. ft MSL indicates feet mean sea level.

Table 2
Groundwater Sampling Event Summary

Well	Hydraulic Location	Aug. 20, 2019	Oct. 7-8, 2019
Purpose of Sampling Event		Initial Assessment	Second Semiannual
GWA-19	Upgradient	Scan	A-01
GWA-20	Upgradient	Scan	A-01
GWC-21	Downgradient	Scan	A-01

Notes:
1. Scan = Initial Assessment Sampling. All Appendix IV.
2. D-XX = Assessment Event Number (Appendix III and Detected Appendix IV).

Table 3
Summary of Groundwater Monitoring Parameters

Appendix III (40 CFR 257)	Appendix IV (40 CFR 257)	Existing State Permit
Boron	Antimony	Arsenic
Calcium	Arsenic	Barium
Chloride	Barium	Cadmium
Fluoride	Beryllium	Chloride
pH	Cadmium	Lead
Sulfate	Chromium	Selenium
Total Dissolved Solids	Cobalt	Silver
	Fluoride	Sulfate
	Lead	
	Lithium	
	Mercury	
	Molybdenum	
	Radium 226 and 228 combined	
	Selenium	
	Thallium	

Table 4A
Summary of Groundwater Elevations
August 2019

Well ID	TOC Elevation (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)
GWA-19	343.48	29.38	314.10
GWA-20	331.48	16.73	314.75
GWC-21	309.40	14.47	294.93

Notes:
1. Groundwater elevations are recorded in feet above mean sea level (ft MSL).
2. ft BTOC indicates feet below top of casing.
3. Depths to water measured August 19, 2019.

Table 4B
Summary of Groundwater Elevations
October 2019

Well ID	TOC Elevation (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)
GWA-19	343.48	30.44	313.04
GWA-20	331.48	18.00	313.48
GWC-21	309.40	14.43	294.97

Notes:
1. Groundwater elevations are recorded in feet above mean sea level (ft MSL).
2. ft BTOC indicates feet below top of casing.
3. Depths to water measured October 7, 2019.

Table 5
Groundwater Flow Velocity Calculations
October 2019

Equation

$$v = \frac{K\,(dh/dl)}{P_e}$$

where: v = ground water velocity
K = hydraulic conductivity
dh/dl = hydraulic gradient
P_e = effective porosity

Values Used in Calculation

	Value		Source
K =	7.7E-04 2.18	cm/sec ft/day	See note 1.
dh/dl =	18.51/792 0.023	ft/ft unitless	Hydraulic gradient from GWA-20 to GWC-21
P_e =	0.20	unitless	See note 1.

Calculation

v = 0.26 ft/day

v = 93.2 ft/yr

Notes

(1) Plant Arkwright Ash Ponds 2 and 3 Ash Monofill Site Acceptability Report (SCS, 2005).

Table 6A
Summary of Groundwater Analytical Data
August 2019

Substance		ARGWA-19	ARGWA-20	ARGWC-21
		8/20/2019	8/20/2019	8/20/2019
Appendix IV	Antimony	ND	ND	ND
	Arsenic	ND (0.00036 J)	ND (0.00047 J)	0.0020
	Barium	0.052	0.079	0.10
	Beryllium	ND	ND	ND
	Cadmium	ND	ND	ND
	Chromium	0.0024	0.0078	ND (0.0017 J)
	Cobalt	ND (0.00011 J)	ND (0.00015 J)	0.0023
	Fluoride	ND (0.045 J)	ND (0.042 J)	ND (0.098 J)
	Lead	ND	ND	ND
	Lithium	ND (0.0044 J)	ND	0.0098
	Mercury	ND	ND	ND
	Molybdenum	ND	ND	ND
	Radium	0.498	0.530	0.978
	Selenium	ND	ND (0.0015 J)	ND
	Thallium	ND	ND	ND

Notes:

1. Results for substances are reported in milligrams per liter (mg/L). Radium results are reported in picocuries per liter (pCi/L).
2. ND (Not Detected) indicates the substance was not detected above the analytical method detection limit (MDL).
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. U indicates the substance was detected below the Minimum Detection Concentration (MDC) and the precision of the laboratory instruments could not produce a reliable value. Therefore, the value followed by U is qualified by the laboratory as estimated.
5. Appendix IV = parameters evaluated during Assessment Monitoring.

Table 6B
Summary of Groundwater Analytical Data
October 2019

Substance		ARGWA-19	ARGWA-20	ARGWC-21
		10/7/2019	10/7/2019	10/8/2019
APPENDIX III	Boron	ND	ND	0.58
	Calcium	14	8.9	60
	Chloride	11	5.2	4.5
	Fluoride	ND (0.049 J)	ND (0.036 J)	ND (0.065 J)
	Sulfate	7.4	17	170
	TDS	150	87	420
APPENDIX IV	Arsenic	ND	ND	ND (0.0012 J)
	Barium	0.049	0.076	0.096
	Cadmium	ND	ND	ND
	Chromium	ND	0.0059	ND
	Cobalt	ND (0.00011 J)	ND	0.0018
	Lead	ND (0.00018 J)	ND (0.00014 J)	ND (0.00015 J)
	Lithium	0.013	0.0066	0.015
	Radium	0.476 U	0.621 U	0.588
	Selenium	ND	ND (0.0016 J)	ND
*	Silver	ND (0.00056 J)	ND (0.00031 J)	ND (0.00043 J)

Notes:

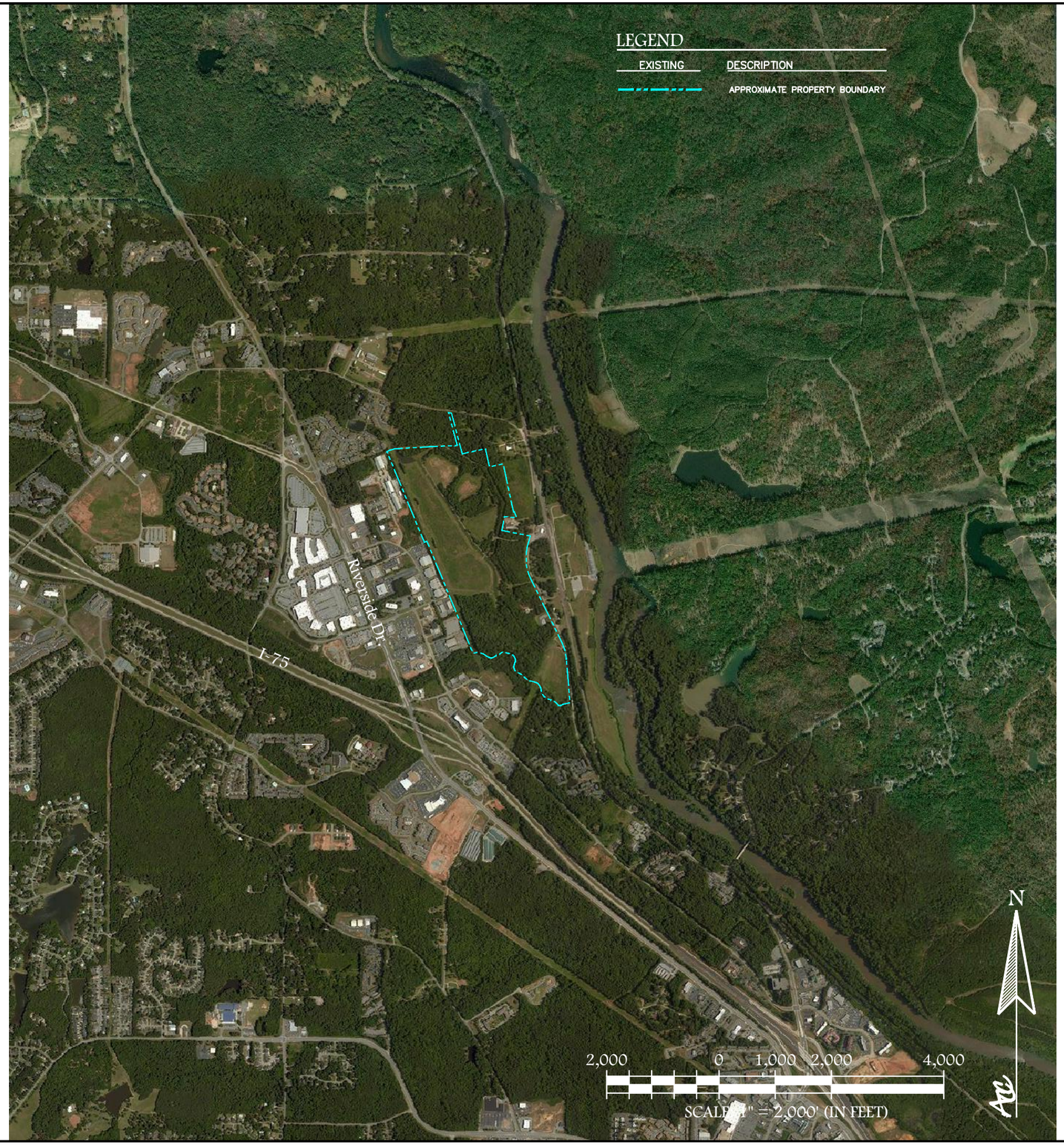
1. Results for substances are reported in milligrams per liter (mg/L). Radium results are reported in picocuries per liter (pCi/L).
2. ND (Not Detected) indicates the substance was not detected above the analytical method detection limit (MDL).
3. ND (value J) indicates the substance was detected at 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. U indicates the substance was detected below the Minimum Detection Concentration (MDC) and the precision of the laboratory instruments could no produce a reliable value. Therefore, the value followed by U is qualified by the laboratory as estimated.
6. Appendix III = indicator parameters evaluated during Detection Monitoring; Appendix IV = parameters evaluated during Assessment Monitoring.

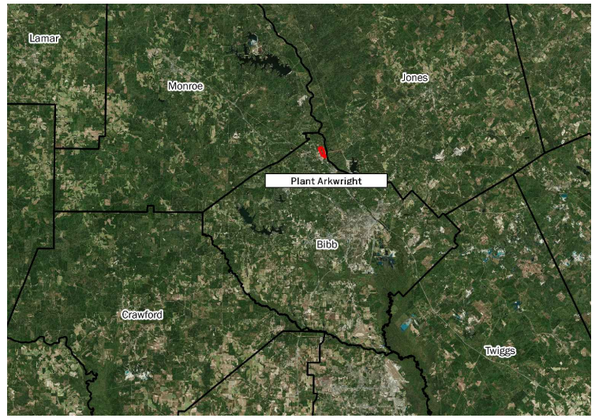
* Appendix I parameter included to meet EPD Rule 391-3-4-.14 requirements that is not included in the Appendix IV parameter list .

Table 7
Statistical Method Summary

Statistical Method Summary		
Monitoring Well Network	Upgradient Wells	GWA-19 and GWA-20
	Downgradient Wells	GWC-21
CCR Monitoring Parameters	Appendix III (Detection Monitoring)	Boron, Calcium, Chloride, Fluoride, pH, Sulfate, and TDS
	Appendix IV (Assessment Monitoring)	Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, combined Radium 226 + 228, Fluoride, Lead, Lithium, Mercury, Molybdenum, Selenium, and Thallium
EPD Permit Metals	Appendix I (Detection Monitoring)	Arsenic, Barium, Cadmium, Lead, Selenium, and Silver
	Appendix II (Assessment Monitoring)	Arsenic, Barium, Cadmium, Lead, Selenium, and Silver
Statistical Methodology	Data Screening Proposed Background	Evaluate outliers, trends, and seasonality when sufficient data are available
	Statistical Limits	Interwell Statistical Limits

FIGURES





LOCATION IN THE STATE OF GEORGIA - NOT TO SCALE

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

PROJECT:

PLANT ARKWRIGHT

5001 ARKWRIGHT ROAD
MACON, GEORGIA

REVISIONS

Drawn by: RW

Checked by: MM

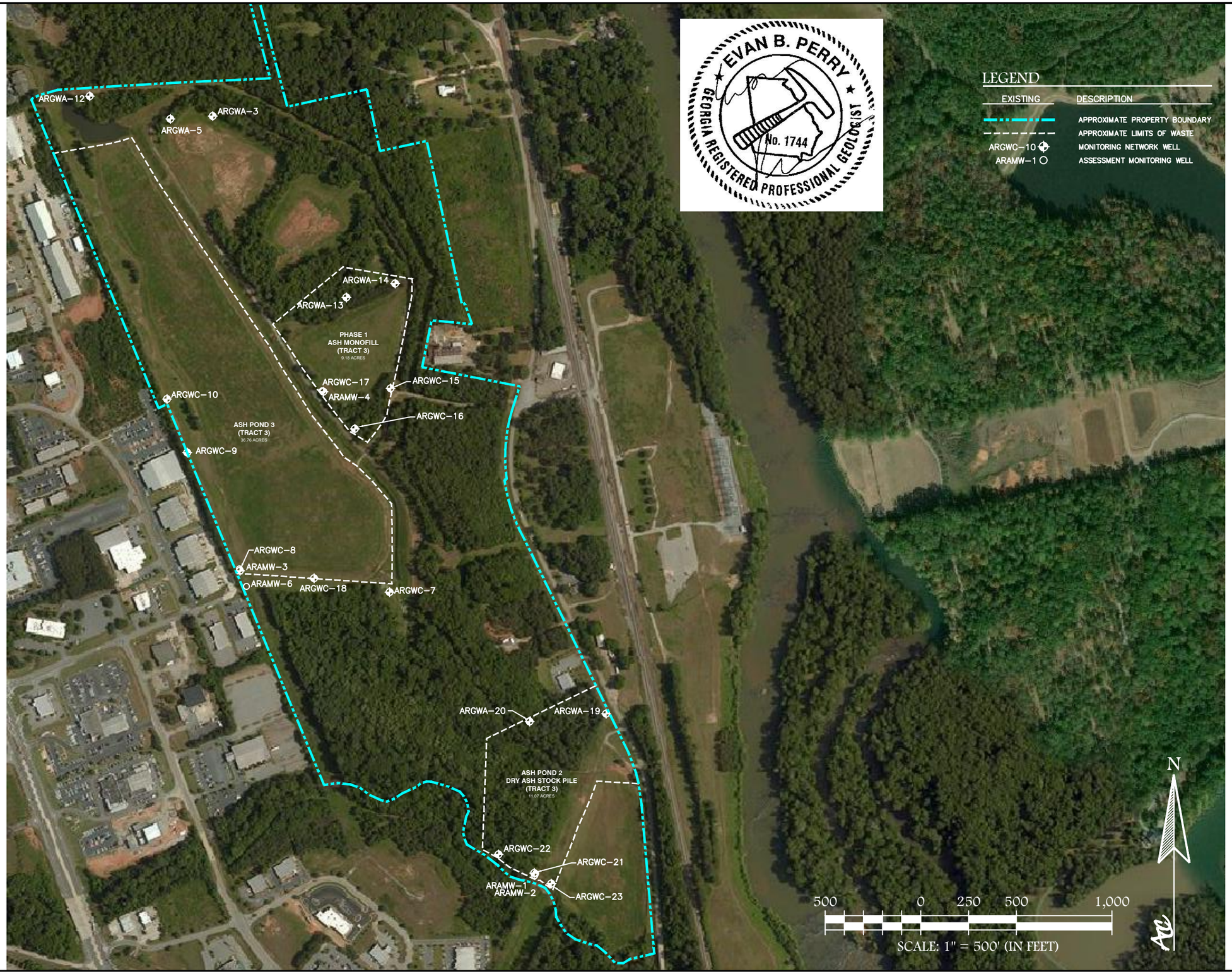
PROJECT NUMBER:

I054-110

February 2020

SITE LOCATION MAP

FIGURE 1



EVAN B. PERRY
GEORGIA REGISTERED PROFESSIONAL GEOLOGIST
No. 1744

LEGEND

EXISTING	DESCRIPTION
	APPROXIMATE PROPERTY BOUNDARY
	APPROXIMATE LIMITS OF WASTE
ARGWC-10	MONITORING NETWORK WELL
ARAMW-1	ASSESSMENT MONITORING WELL

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Drawn by: MM
Checked by: EP

PROJECT NUMBER:
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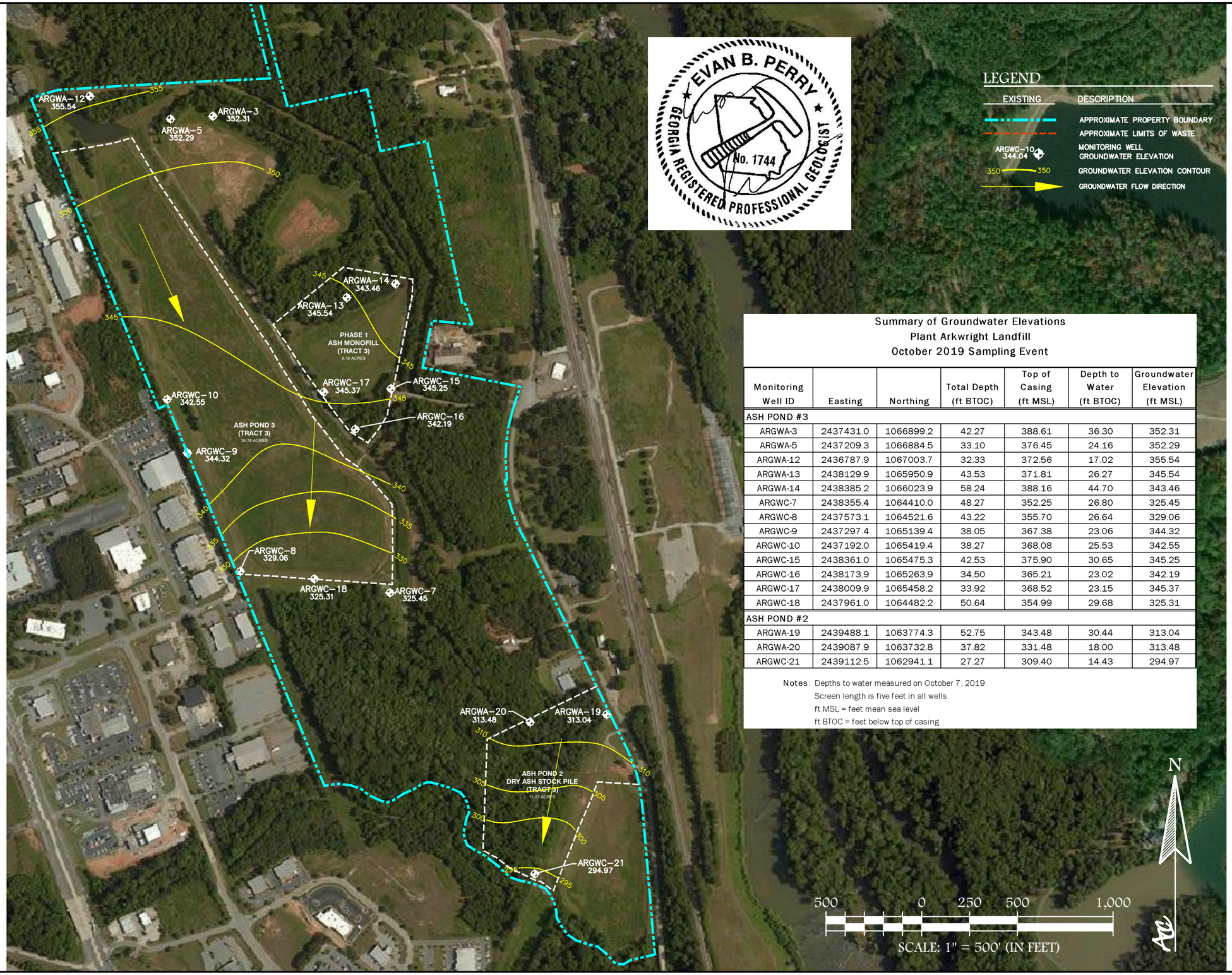
February 2020

WELL LOCATION MAP

FIGURE 2



EVAN B. PERRY
GEORGIA REGISTERED PROFESSIONAL GEOLOGIST
No. 1744

LEGEND

EXISTING	DESCRIPTION
	APPROXIMATE PROPERTY BOUNDARY
	APPROXIMATE LIMITS OF WASTE
ARGWC-10 344.04	MONITORING WELL GROUNDWATER ELEVATION
350 350	GROUNDWATER ELEVATION CONTOUR
	GROUNDWATER FLOW DIRECTION

Summary of Groundwater Elevations
Plant Arkwright Landfill
October 2019 Sampling Event

Monitoring Well ID	Easting	Northing	Total Depth (ft BTOC)	Top of Casing (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)
ASH POND #3						
ARGWA-3	2437431.0	1066899.2	42.27	388.61	36.30	352.31
ARGWA-5	2437209.3	1066884.5	33.10	376.45	24.16	352.29
ARGWA-12	2436787.9	1067003.7	32.33	372.56	17.02	355.54
ARGWA-13	2438129.9	1065950.9	43.53	371.81	26.27	345.54
ARGWA-14	2438385.2	1066023.9	58.24	388.16	44.70	343.46
ARGWC-7	2438355.4	1064410.0	48.27	352.25	26.80	325.45
ARGWC-8	2437573.1	1064521.6	43.22	355.70	26.64	329.06
ARGWC-9	2437297.4	1065139.4	38.05	367.38	23.06	344.32
ARGWC-10	2437192.0	1065419.4	38.27	368.08	25.53	342.55
ARGWC-15	2438361.0	1065475.3	42.53	375.90	30.65	345.25
ARGWC-16	2438173.9	1065263.9	34.50	365.21	23.02	342.19
ARGWC-17	2438009.9	1065458.2	33.92	368.52	23.15	345.37
ARGWC-18	2437961.0	1064482.2	50.64	354.99	29.68	325.31
ASH POND #2						
ARGWA-19	2439488.1	1063774.3	52.75	343.48	30.44	313.04
ARGWA-20	2439087.9	1063732.8	37.82	331.48	18.00	313.48
ARGWC-21	2439112.5	1062941.1	27.27	309.40	14.43	294.97

Notes: Depths to water measured on October 7, 2019.
Screen length is five feet in all wells.
ft MSL = feet mean sea level
ft BTOC = feet below top of casing

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5001 ARKWRIGHT ROAD
MACON, GEORGIA

REVISIONS

Drawn by: MM
Checked by: EP

PROJECT NUMBER:
I054-110
February 2020

OCTOBER 2019
WATER TABLE
CONTOUR MAP

FIGURE 3

APPENDICES

APPENDIX A

Well Installation Reports

Georgia Power Company
Former Plant Arkwright
Closed Ash Pond No.2 Dry Ash Stockpile

PERMIT #: 011-031D(LI)

Bibb County

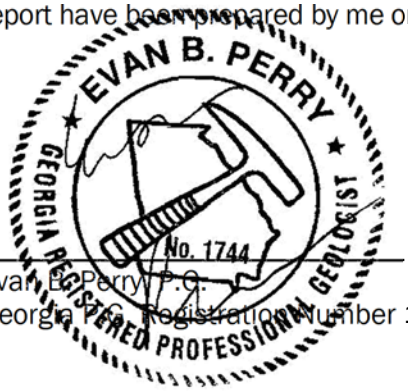
Groundwater Monitoring Well Installation Report

Atlantic Coast Consulting, Inc.

TABLE OF CONTENTS

Professional Geologist Certification

I, Evan B. Perry, certify that I am a qualified groundwater scientist as demonstrated by a Georgia state registered professional geologist certification. I have sufficient training and experience in groundwater hydrology and related fields to make sound professional judgments regarding groundwater monitoring and contaminant fate and transport. I further certify that the data in this report have been prepared by me or a subordinate working under my direction.



Evan B. Perry, P.G.
Georgia PG Registration Number 1744

1.0 Introduction

Georgia Power Company (GPC) –former Plant Arkwright is located in Bibb County near Macon on Arkwright Road. Plant Arkwright was retired in 2002 and decommissioned in 2003. The CCR unit AP-2 Dry Ash Stack (AP-2DAS) was closed in 2010 in accordance with the solid waste regulations in effect at the time of its closure. A closure certificate was issued by the Georgia Environmental Protection Division (GA EPD) for AP-2DAS on June 30, 2010. The site operates during the post closure care period under EPD solid waste handling permit number 011-031D(LI). Figure 1, Well Location Map, depicts the location of the monitoring and assessment wells.

This report is prepared document details regarding the design, installation, and development of monitoring well ARAMW-1 and ARAMW-2 installed at GPC Plant Arkwright, Ash AP-2. These locations are intended to assess groundwater conditions at ARGWC-21 vertically and hydraulically downgradient.

2.0 Drilling and Well Installation

Installation details and descriptions of procedures are provided in the following sections.

2.1 Drilling Method

Groundwater monitoring wells were installed by Cascade Environmental, LP (Cascade) using rotosonic drilling techniques. Cascade has current surety bond on file with the Georgia Water Well Standards Advisory Council. A copy of Cascade's bond is included in Appendix A, Driller Bond Certificate.

Drilling equipment was steam-cleaned before the start of drilling and between each boring. Borings for groundwater wells were drilled with a 6-inch outer diameter core barrel. Groundwater wells were extended to depths deep enough to provide a sufficient water column for sampling efforts targeted within the uppermost aquifer at the site. Boring and well construction logs are included in Appendix B, Boring and Well Construction Logs.

2.2 Screened Interval

The wells are screened in unconsolidated silty sand with gravel as shown in the boring and well installation logs provided as Appendix B. The wells are constructed with 10 feet lengths of screen.

2.3 Well Casing and Screens

The wells are constructed of 2-inch diameter, American Society for Testing and Materials (ASTM)-rated, flush-threaded, Schedule 40 PVC casing flush-threaded to pre-packed dual-wall slotted PVC screens. The casing and pre-packed screen arrived pre-cleaned and packaged by the manufacturer. Well construction materials are sufficiently durable to resist chemical and physical degradation and not interfere with the quality of groundwater samples. Solvent or glue was not used to construct the wells. Casing and screen sections are flush-threaded. Wells were constructed in accordance with accepted industry standards and followed guidelines within the Manual for Groundwater Monitoring (GA EPD, 1991).

2.4 Well Intake Design

The wells are designed and constructed to: (1) allow sufficient groundwater flow to the well for sampling; (2) minimize the passage of formation materials (turbidity) into the wells; and (3) ensure sufficient structural integrity to prevent collapse of the well. The well is screened using 0.010-inch slotted PVC pre-packed dual-wall well screen. The pre-packed dual-wall well screen combines a centralized inner well screen, a void for site-specific filter sand pack, and an outer conductor screen in one integrated unit. Based on the nature of deposits, the screen will retain at least 90 percent of the filter pack and 40 percent of the formation.

2.5 Filter Pack

During groundwater well construction, filter sand was slowly washed with potable water into the annular space surrounding the well screen to approximately two feet above the screened interval. Filter sand is approximately 20/30 grade silica sand from Standard Sand and Silica Co. A grain size curve for the filter pack is provided in Appendix C, Filter Pack Grain Size Curve.

Filter pack material was placed within the pre-packed dual-wall well screens and in the annular space between the outside of the pre-pack screen and borehole wall to ensure an adequate thickness of filter pack material between the well and the formation. Filter pack material placed in the annular space outside of the well screen extended approximately 2 feet above the top of screen. No bridging occurred during filter pack placement.

After placing the filter pack, the wells were pumped to ensure settlement of the filter pack, prior to installing the annular seal. The depth of top of filter pack was measured and recorded in the well construction log provided in Appendix B.

2.6 Annular Seal

Two to four feet of hydrated sodium bentonite overlies the filter pack. A high solid bentonite grout slurry was placed into the annual space from the bottom to the top with tremie pipe. A cement apron 4-feet by 4-feet by 4-inches was poured around the wells. The pads are mounded slightly outward to direct surface drainage away from the well.

2.7 Cap and Protective Casing

The well risers are fitted with a locking cap and a lockable cover. A one-quarter inch vent hole in the PVC riser pipe provides an avenue for the escape of gas. The protective cap guards the casing from damage and the locking cap serves as a security device to prevent well tampering. Bollards were installed around the corners of the wells to protect the wells from damage as necessary.

Wells are clearly marked with signage with the proper designation. A weep hole was drilled in the outer protective casing near the bottom above the concrete pad. Pea gravel was placed inside the protective casing between the riser pipe and the outer casing.

3.0 Well Development

The monitoring wells were developed using a combination of surging and pumping to (1) restore the natural hydraulic conductivity of the formation, and (2) to remove fine-grained sediment to ensure low- turbidity groundwater samples. The well was alternately surged and purged until

visually clear of particulates. Turbidity, pH, temperature, and conductivity measurements were made to ensure that each well was fully developed. All equipment and tubing placed in the well was decontaminated or new. Development forms are included in Appendix D, Well Development Forms.

4.0 Survey

The horizontal and vertical location of the newly installed monitoring locations was surveyed by Southern Company Civil Field Services T&PS. under the direction of a Georgia Registered Land Surveyor (RLS). The horizontal location and vertical elevation of the wells were surveyed to the nearest, 0.01-foot. The elevations were measured on a survey pin embedded in the concrete pad, ground surface, and the top of PVC well casing. The survey for the new monitoring wells was completed On December 13, 2019. Elevations are referenced to mean sea level (MSL) in feet; depth is referenced from TOC in feet. Well coordinates are provided in Table 1. A site map depicting the surveyed locations is included in Figure 1; a survey data sheet sealed by a Georgia RLS is included in Appendix E, Survey Data. The well locations shown on Figure 1 have been referenced in the recent Groundwater Monitoring Plan.

5.0 General References

Georgia Environmental Protection Division, Georgia Department of Natural Resources. Manual for Groundwater Monitoring, September 1991.

TABLE

Table 1
Summary of Well Installation Dates, Coordinates, Elevation Screen Interval and Purpose

Well	Installation Date (mm/dd/yyyy)	Northing	Easting	Ground Elevation (ft MSL)	Top of Casing Elevation (ft MSL)	Top of Screen Elevation (ft MSL)	Bottom of Screen Elevation (ft MSL)	Total Depth (ft BTOC)	Purpose
ARAMW-1	11/20/2019	1,062,937.14	2,439,119.67	305.69	308.67	273.64	263.64	45.33	Vertical Assessment of ARGWC-21
ARAMW-2	11/20/2019	1,062,926.91	2,439,115.22	305.47	308.52	294.02	284.02	24.80	Horizontal Assessment of ARGWC-21

Notes:
1. ft BTOC indicates feet below top of casing.
2. ft MSL indicates feet mean sea level.

FIGURE

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

PROJECT:

PLANT ARKWRIGHT

5001 ARKWRIGHT ROAD
MACON, GEORGIA

REVISIONS

Drawn by: RW

Checked by: MM

PROJECT NUMBER:

I054-110

January 2020

ASSESSMENT WELL LOCATION MAP

FIGURE 1

APPENDICES

APPENDIX A

Driller Bond Certificate

COPY

CONTINUATION CERTIFICATE

Atlantic Specialty Insurance Company , Surety upon

a certain Bond No. **800031223**

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

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

and in favor of State of Georgia
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on June 30, 2019
(MONTH-DAY-YEAR)

and ending on June 30, 2021
(MONTH-DAY-YEAR)

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

Description of bond Water Well Contractor Performance Bond

Premium: $1,200.00

PROVIDED: That this continuation certificate does not create a new obligation and is executed upon the express condition and provision that the Surety's liability under said bond and this and all Continuation Certificates issued in connection therewith shall not be cumulative and that the said Surety's aggregate liability under said bond and this and all such Continuation Certificates on account of all defaults committed during the period (regardless of the number of years) said bond had been and shall be in force, shall not in any event exceed the amount of said bond as hereinbefore set forth.

Signed and dated on May 9, 2019
(MONTH-DAY-YEAR)
Atlantic Specialty Insurance Company

By _____
Attorney-in-Fact Elizabeth R. Hahn

Parker, Smith & Feek, Inc.
Agent

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

(425) 709-3600
Telephone Number of Agent

S-0157/GE 8/08

XDP

OneBeacon
INSURANCE GROUP

Power of Attorney

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

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

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

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

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

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

ATLANTIC SPECIALTY INSURANCE COMPANY CORPORATE SEAL 1986 NEW YORK

By _____
Paul J. Brehm, Senior Vice President

STATE OF MINNESOTA
HENNEPIN COUNTY

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

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

_____
Notary Public

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

Signed and sealed. Dated 9 day of May 2019

ATLANTIC SPECIALTY INSURANCE COMPANY CORPORATE SEAL 1986 NEW YORK

This Power of Attorney expires
October 1, 2019

_____
Christopher V. Jerry, Secretary

APPENDIX B

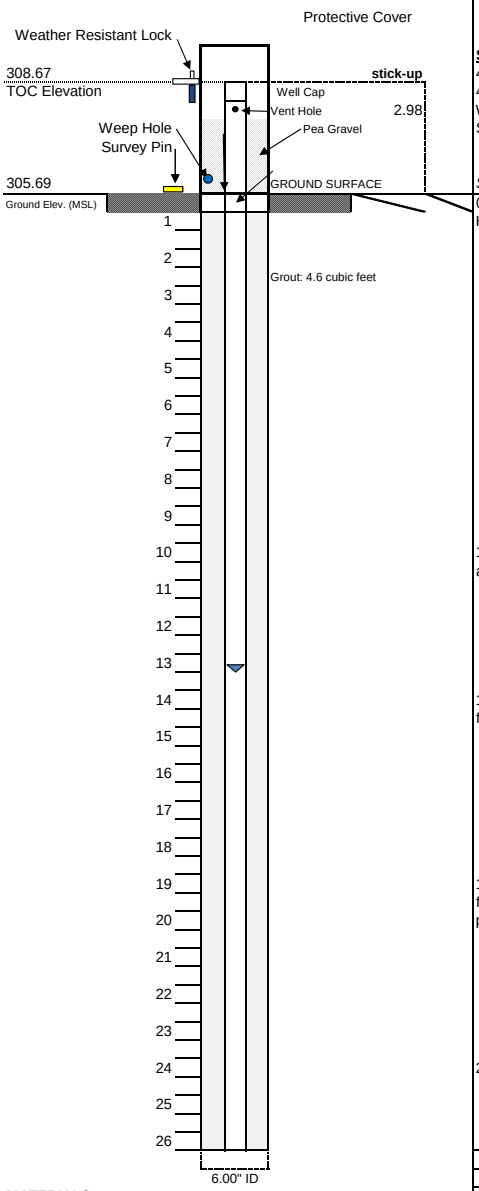
BORING AND WELL CONSTRUCTION LOGS

ATLANTIC COAST CONSULTING, INC.

ARAMW-1

BORING ID

PROJECT:	Plant Arkwright	**PROJECT NO.:**	I054-110
TOTAL DEPTH:	45.33 ft. BTOC	**SITE LOCATION:**	Macon, Georgia
DATE BEGIN:	20-Nov-2019	**DRILLER:**	Isaac Young
DATE COMPLETE:	20-Nov-2019	**RIG TYPE:**	T-300 Rotosonic
INSTALLED BY:	Cascade	**METHOD:**	Rotosonic
SUPERVISED BY:	Taylor Goble		
WATER 1ST ENCOUNTERED:	14' BGS		
WATER AFTER 48 HOURS:	13.43' BTOC		



Northing: 1062937.141
Easting: 2439119.673

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

SOIL DESCRIPTION

0-10' Red silty clay (CL). Micaceous. Color change to light brown. Hang augered

10-14' No recovery when driller switched to rock coring techniques at 14' bgs

14-19' Rock. Gneiss with high quartz content. Iron staining and light fracturing evident from 14-17'. Harder rock from 17-19'

19-24' Extremely fractured section. Mottled dark brown moist silty sand from 19-20'. Return to gneiss found above at 20'. Extremely large core pieces. No fracturing or iron staining.

24-29' As above.

Core Photos

MATERIALS:

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

Soil Descriptions from Unified Soil Classification System

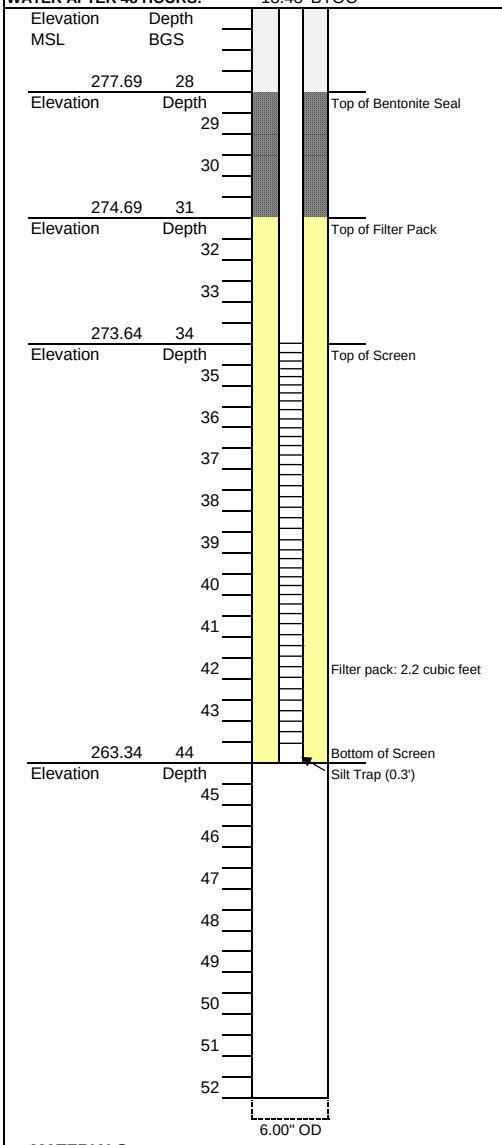
BTOC - Below Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

ATLANTIC COAST CONSULTING, INC.

ARAMW-1

BORING ID

PROJECT:	Plant Arkwright	**PROJECT NO.:**	I054-110
TOTAL DEPTH:	45.33 ft. BTOC	**SITE LOCATION:**	Macon, Georgia
DATE BEGIN:	20-Nov-2019	**DRILLER:**	Isaac Young
DATE COMPLETE:	20-Nov-2019	**RIG TYPE:**	T-300 Rotosonic
INSTALLED BY:	Cascade	**METHOD:**	Rotosonic
SUPERVISED BY:	Taylor Goble		
WATER 1ST ENCOUNTERED:	14' BGS		
WATER AFTER 48 HOURS:	13.43' BTOC		



29-34' As above. Some fracturing and iron staining present. Layer of mottled gold and black sand, moist, from 32-34'

34-39' Hard gneiss. No fracturing or iron staining. Large pieces.

39-44' As above. Some fracturing and iron staining ~44'. Limited recovery

Total well depth 44.0' BGS

Core Photos

MATERIALS:

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

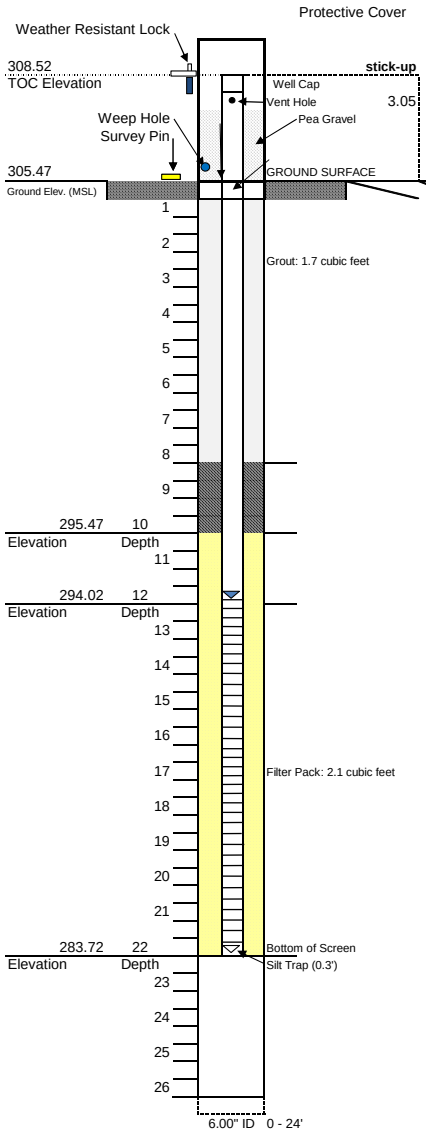
TOC - Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

ATLANTIC COAST CONSULTING, INC.

ARAMW-2

BORING ID

PROJECT:	Plant Arkwright	**PROJECT NO.:**	I054-110
TOTAL DEPTH:	24.80 ft. BTOC	**SITE LOCATION:**	Macon, Georgia
DATE BEGIN:	20-Nov-2019	**DRILLER:**	Isaac Young
DATE COMPLETE:	20-Nov-2019	**RIG TYPE:**	T-300 Rotosonic
INSTALLED BY:	Cascade	**METHOD:**	Rotosonic
SUPERVISED BY:	Taylor Goble		
WATER 1ST ENCOUNTERED:	12.0' BGS		
WATER AFTER 48 HOURS:	13.49' BTOC		



Northing: 1062926.908
Easting: 2439115.223

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

SOIL DESCRIPTION

0-9' Red silty clay (CL). Micaceous. Color change to light brown. Hand augered.

9-15' Gray silty sand (SC). Dry. Becomes wet around 12'. Changes in color to a red brown coarse sand (S) around 13.5'.

15-22' Continue gray coarse sand (S). Moist. Transitions into a dry and gravelly brown sand at 19'. Bigger gravel pieces and rock pieces apparent from 19-22' (SG).

Total well depth 22.0' BGS

Core Photos

MATERIALS:

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

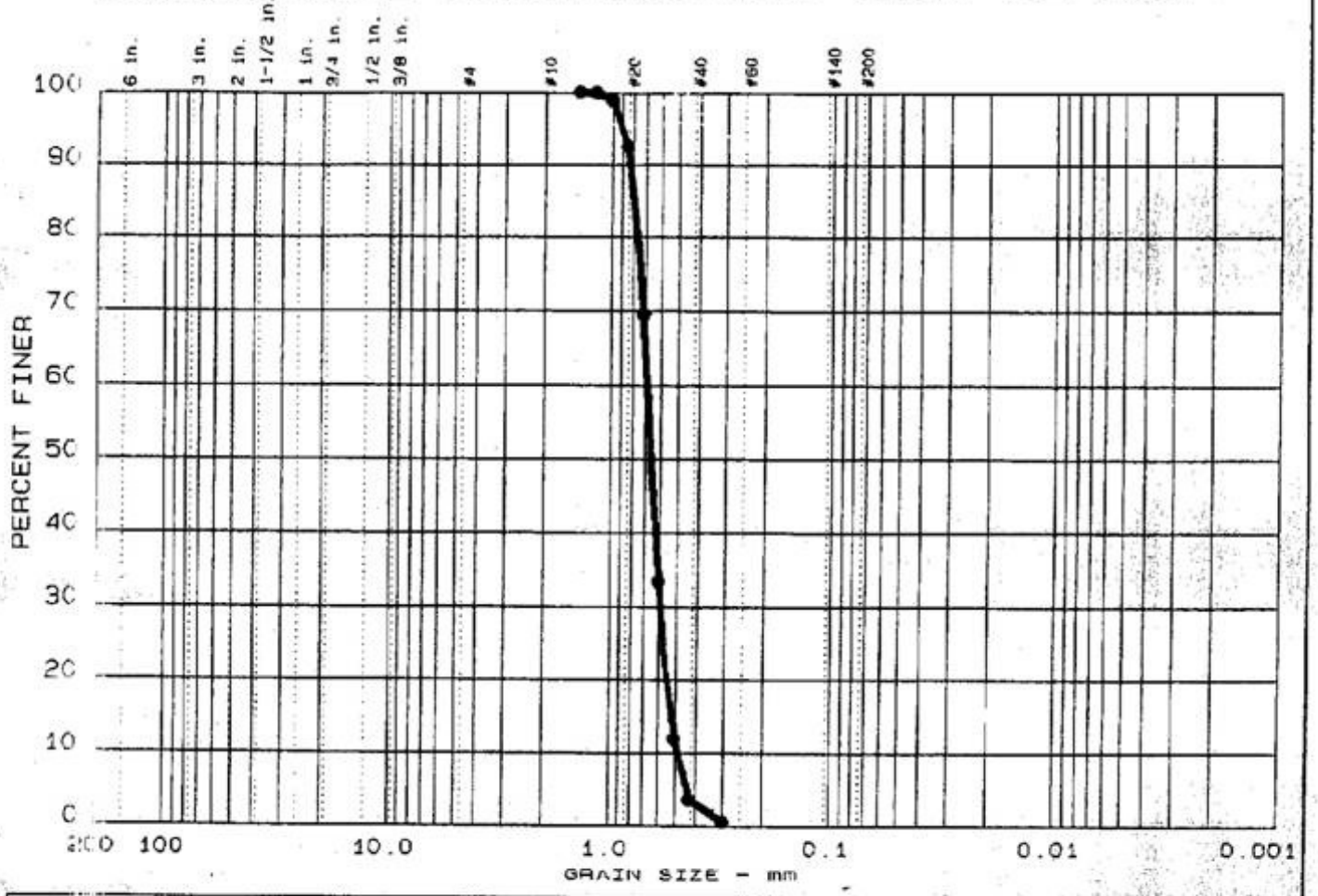
Soil Descriptions from Unified Soil Classification System

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

APPENDIX C

FILTER PACK GRAIN SIZE CURVE

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	0.0	100.0		

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	ND	ND	0.78	0.68	0.65	0.588	0.5182	0.4814	1.06	1.4

MATERIAL DESCRIPTION	USCS	AASHTO
● WELL GRAVEL PACK #1	ND	ND

Project No.: 30774-2-5010-01
Project: SOUTHERN PRODUCTS & SILICA COMPANY
● Location: WELL GRAVEL PACK #1

Date: 01-22-02

GRAIN SIZE DISTRIBUTION TEST REPORT

LAW ENGINEERING, INC.

Remarks:

ND=NOT DETERMINED

Figure No. 01

REVIEWED BY: [signature]

APPENDIX D

WELL DEVELOPMENT FORMS

Job Name: Plant Arkwright | Job No. I054-110 | Well No. ARAMW-1

Developed By: A. Schnittker | Date of Installation: 11/20/2019 | Sheet 1 of 1

Started Dev. 12-02-19 / 1330 (Date / Time) | Completed Dev. 12-02-19 / 1402 (Date / Time)

W.L. Before Dev. 13.43 / 12-02-19 / 1325 (BTOC / Date / Time) | W.L. After Dev. 14.09 / 12-02-19 / 1413 (BTOC / Date / Time)

Well Depth Before Dev.: 45.29 BTOC | Well Depth After Dev.: 45.33 BTOC

Water Column (H): 31.86 Ft. | Well Dia.: 2 In. | Well Volume: 5.09 Gal.

Screen Length: 10 Ft.

Date / Time	Volume Removed (Gal.)	Field Parameters				Remarks
		Specific Cond. (umhos/cm)	Temperature (oC)	pH (S.U.)	Turbidity (NTU)	
12-02-19 1337	12	720	19.42	7.01	7.32	
12-02-19 1342	15	717	19.33	6.59	4.6	Re-surged with whale pump
12-02-19 1347	18	714	19.40	6.38	26.6	
12-02-19 1352	21	713	19.41	6.29	4.39	Re-surged with whale pump
12-02-19 1357	26	707	19.46	6.26	12.3	
12-02-19 1402	30	707	19.41	6.24	3.1	Development complete
		Total Volume Removed (gal): 30				

Development Method: Surged Pump Q= 0.9 gpm

Surged with surge blockers and foot valve before starting development with submersible whale pump

Notes: H = well depth (BTOC) - W.L. (BTOC)

Well volume in pipe:

2" diameter well: 0.16 X H = volume in gallons

4" diameter well: 0.66 X H = voume in gallons

Product Name: Low-Flow System

Date: 2019-12-02 14:18:26

Project Information:		Pump Information:	
Operator Name	Anna Schnittker.	Pump Model/Type	Whale
Company Name	ACC	Tubing Type	Poly
Project Name	Arkwright	Tubing Diameter	.37 in
Site Name	Default Site	Tubing Length	50 ft
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	445707		
Turbidity Make/Model	Hach 2100	Pump placement from TOC	45 ft

Well Information:		Pumping Information:	
Well ID	ARAMW-1	Final Pumping Rate	0 mL/min
Well diameter	2 in	Total System Volume	1.147167 L
Well Total Depth	45.29 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	0 in
Depth to Water	13.43 ft	Total Volume Pumped	0 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 100		+/- 0.2	+/- 100
Last 5	13:42:26	600.87	19.33	6.59	717.40	4.60	--	0.21	-41.89
Last 5	13:47:26	900.86	19.40	6.38	714.12	26.60	--	0.21	-44.21
Last 5	13:52:26	1200.86	19.41	6.29	713.04	4.39	--	0.27	-48.73
Last 5	13:57:26	1500.87	19.46	6.26	707.91	12.30	--	0.23	-50.40
Last 5	14:02:26	1800.87	19.41	6.24	707.22	--	--	0.29	-52.16
Variance 0			0.01	-0.09	-1.09			0.05	-4.52
Variance 1			0.05	-0.03	-5.13			-0.03	-1.67
Variance 2			-0.05	-0.02	-0.69			0.06	-1.76

Notes

Start: 1330 WL: 13.43 BTOC: 45.29. End: 14:02 WL: 14.09 BTOC: 45.33

Grab Samples

Atlantic Coast Consulting, Inc.
Well Development Field Record

Job Name: Plant Arkwright | Job No. I054-110 | Well No. ARAMW-2

Developed By: A. Schnittker/ O. Fuquea | Date of Installation: 11/20/2019 | Sheet 1 of 1

Started Dev. 12-02-19 / 1140 (Date / Time) | Completed Dev. 12-02-19 / 1300 (Date / Time)

W.L. Before Dev. 13.49 / 12-02-19 / 1138 (BTOC / Date / Time) | W.L. After Dev. 13.64 / 12-02-19 / 1304 (BTOC / Date / Time)

Well Depth Before Dev.: 24.80 BTOC | Well Depth After Dev.: 24.84 BTOC

Water Column (H): 11.31 Ft. | Well Dia.: 2 In. | Well Volume: 1.8 Gal.

Screen Length: 10 Ft.

Date / Time	Volume Removed (Gal.)	Field Parameters: Specific Cond. (umhos/cm)	Temperature (oC)	pH (S.U.)	Turbidity (NTU)	Remarks
12-02-19 1231	33	1187	20.16	6.03	799	
12-02-19 1236	36	1194	20.20	6.02	50	
12-02-19 1241	40	1216	20.20	6.02	19	
12-02-19 1245	43	1231	20.20	6.03	14	
12-02-19 1251	48.5	1254	20.18	6.04	6.81	
12-02-19 1300	53	1278	20.20	6.05	4.24	Development complete
		Total Volume Removed (gal): 53				

Development Method: Surged Pump Q= 0.7 gpm

Surged with surge blockers and foot valve before starting development with submersible whale pump

Notes: H = well depth (BTOC) - W.L. (BTOC)

Well volume in pipe:

2" diameter well: 0.16 X H = volume in gallons

4" diameter well: 0.66 X H = voume in gallons

Product Name: Low-Flow System

Date: 2019-09-16 16:27:35

Project Information:		Pump Information:	
Operator Name	Anna Schnittker	Pump Model/Type	Whale
Company Name	ACC	Tubing Type	poly
Project Name	Arkwright	Tubing Diameter	.37 in
Site Name	Default Site	Tubing Length	30 ft
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	369557		
Turbidity Make/Model	Hach 2100	Pump placement from TOC	24.8 ft

Well Information:		Pumping Information:	
Well ID	ARAMW-2	Final Pumping Rate	0 mL/min
Well diameter	2 in	Total System Volume	0.7243003 L
Well Total Depth	24.80 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	0 in
Depth to Water	13.49 ft	Total Volume Pumped	200.6 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 100	+/- 0.1	+/- 5%	+/- 100		+/- 0.2	+/- 100
Last 5	15:59:59	900.02	20.17	6.02	1216.86	19.10	--	0.10	-5.93
Last 5	16:04:59	1200.02	20.20	6.03	1231.87	14.60	--	0.11	-5.12
Last 5	16:09:59	1500.02	20.18	6.04	1254.78	6.89	--	0.12	-3.49
Last 5	16:14:59	1800.02	20.18	6.04	1270.68	6.81	--	0.12	-2.54
Last 5	16:19:59	2100.02	20.16	6.05	1278.22	4.24	--	0.12	-1.01
Variance 0			-0.03	0.00	22.91			0.01	1.63
Variance 1			0.00	0.00	15.90			0.00	0.96
Variance 2			-0.02	0.01	7.54			0.01	1.53

Notes

Start develop @ 11:38 end at 1300. WL start 13.49 TOC end: 13.64. Well depth start: 24.8 end 24.84 Btoc

Grab Samples

APPENDIX E

SURVEY DATA

ARKWRIGHT PIEZOMETER AND MONITORING WELLS 12-13-2019
FIELD WORK 12-13-2019 BY FL BULLARD & FRANK KENNEY T&PS CIVIL FIELD SERVICES
NAD 83 GEORGIA WEST ZONE, NAVD 1988, LAT-LONG, NORTHING & EASTING ARE FOR THE NAIL IN THE CONCRETE PAD

PIEZOMETER ID	LATITUDE DD	LONGITUDE DD	NAD 83 NORTHING	NAD 83 EASTING	ELEVATION TOP NAIL	ELEVATION TOP OF PVC	COMMENTS	ELEVATION GROUND
ARAMW1	32.9214266	83.7021468	1,062,937.14	2,439,119.67	305.69	308.67	AP2	305.59
ARAMW2	32.9213986	83.7021615	1,062,926.91	2,439,115.22	305.47	308.52	AP2	305.47
ARAMW3	32.9258269	83.7071719	1,064,531.31	2,437,570.76	352.38	355.35	AP3	352.35
ARAMW4	32.9283825	83.7057470	1,065,462.99	2,438,003.90	364.61	367.61	AP3	364.40
ARAMW6	32.9255748	83.7070522	1,064,439.75	2,437,607.88	334.48	337.34	AP3	334.47
ARPZ23	32.9212837	83.7018796	1,062,885.48	2,439,201.88	304.81	307.79	AP3	304.48
ARPZ22	32.9217073	83.7027774	1,063,038.40	2,438,925.73	307.31	310.18	AP3	307.13

GEORGIA REGISTERED No.2269 PROFESSIONAL LAND SURVEYOR F.L. BULLARD

12-20-2019

SURVEY DATA CERTIFICATION FOR SOUTHERN COMPANY TO DETERMINE NORTHING, EASTING AND VERTICAL ELEVATION OF THE NAIL AS LISTED ABOVE
DATE OF FIELD SURVEY & INSPECTION 12-13-2019
FIELD SURVEY POSITIONAL TOLERANCE = 0.5 FEET HORIZONTAL-NAD 83, 0.1 FEET VERTICAL-NAD88
EQUIPMENT USED TO RECORD DATA, LEICA (GPS) GS14 ANTENNA AND CS15 SENSOR

Georgia Power Company
Former Plant Arkwright
Closed Ash Pond No. 2 Dry Ash Stockpile

PERMIT #: 011-031D(LI)

Bibb County

Groundwater Monitoring Well Installation Report

Atlantic Coast Consulting, Inc.

TABLE OF CONTENTS

Professional Geologist Certification

I, Evan B. Perry, certify that I am a qualified groundwater scientist as demonstrated by a Georgia state registered professional geologist certification. I have sufficient training and experience in groundwater hydrology and related fields to make sound professional judgments regarding groundwater monitoring and contaminant fate and transport. I further certify that the data in this report have been prepared by me or a subordinate working under my direction.

_____
Evan B. Perry, P.G.
Georgia P.G. Registration Number 1744

1.0 Introduction

Georgia Power Company (GPC) –former Plant Arkwright is located in Bibb County near Macon on Arkwright Road. Plant Arkwright was retired in 2002 and decommissioned in 2003. The CCR unit AP-2 Dry Ash Stack (AP-2DAS) was closed in 2010 in accordance with the solid waste regulations in effect at the time of its closure. A closure certificate was issued by the Georgia Environmental Protection Division (GA EPD) for AP-2DAS on June 30, 2010. The site operates during the post closure care period under EPD solid waste handling permit number 011-031D(LI). Figure 1, Well Location Map, depicts the location of the previously approved monitoring network and two new wells to expand the well network to meet GA EPD's CCR regulations.

AP-2DAS is subject to the requirements of relevant portions of Georgia Rules for Solid Waste Management Chapter 391-3-4-.10. Chapter 391-3-4-.10(6) includes 40 Code of Federal Regulations (CFR) § 257.91(c)(1) by reference which requires a minimum of three downgradient network wells. The facility was previously permitted by GA EPD with one downgradient monitoring well (ARGWC-21). In order to meet the requirements of § 257.91(c)(1) two new wells have been added to the downgradient monitoring network (ARGWC-22 and ARGWC-23). The locations for the wells were selected based on the configuration of the waste footprint, groundwater elevation and flow direction, site topography, and drilling accessibility considerations. Potentiometric maps for more than 15 years from the site show consistent flow directions towards existing downgradient monitoring well ARGWC-21, which is also located close to the property boundary. Addition of these two new wells, ARGWC-22 and ARGWC-23 provides better data resolution at the downgradient area, while meeting the new CCR requirements.

2.0 Drilling and Well Installation

Installation details and descriptions of procedures are provided in the following sections.

2.1 Drilling Method

Groundwater monitoring wells were installed by Cascade Environmental, LP (Cascade) using rotosonic drilling techniques. Cascade has current surety bond on file with the Georgia Water Well Standards Advisory Council. A copy of Cascade's bond is included in Appendix A, Driller Bond Certificate.

Drilling equipment was steam-cleaned before the start of drilling and between each boring. Borings for groundwater wells were drilled with a 6-inch outer diameter core barrel. Groundwater wells were extended to depths deep enough to provide a sufficient water column for sampling efforts targeted within the uppermost aquifer at the site. Boring and well construction logs are included in Appendix B, Boring and Well Construction Logs.

2.2 Screened Interval

The wells are screened in unconsolidated silty sand with gravel as shown in the boring and well installation logs provided as Appendix B. The wells are constructed with 10 feet lengths of screen.

2.3 Well Casing and Screens

The wells are constructed of 2-inch diameter, American Society for Testing and Materials (ASTM)-rated, flush-threaded, Schedule 40 PVC casing flush-threaded to pre-packed dual-wall slotted

PVC screens. The casing and pre-packed screen arrived pre-cleaned and packaged by the manufacturer. Well construction materials are sufficiently durable to resist chemical and physical degradation and not interfere with the quality of groundwater samples. Solvent or glue was not used to construct the wells. Casing and screen sections are flush-threaded. Wells were constructed in accordance with accepted industry standards and followed guidelines within the Manual for Groundwater Monitoring (GA EPD, 1991).

2.4 Well Intake Design

The wells are designed and constructed to: (1) allow sufficient groundwater flow to the well for sampling; (2) minimize the passage of formation materials (turbidity) into the wells; and (3) ensure sufficient structural integrity to prevent collapse of the well. The well is screened using 0.010-inch slotted PVC pre-packed dual-wall well screen. The pre-packed dual-wall well screen combines a centralized inner well screen, a void for site-specific filter sand pack, and an outer conductor screen in one integrated unit. Based on the nature of deposits, the screen will retain at least 90 percent of the filter pack and 40 percent of the formation.

2.5 Filter Pack

During groundwater well construction, filter sand was slowly washed with potable water into the annular space surrounding the well screen to approximately two feet above the screened interval. Filter sand is approximately 20/30 grade silica sand from Standard Sand and Silica Co. A grain size curve for the filter pack is provided in Appendix C, Filter Pack Grain Size Curve.

Filter pack material was placed within the pre-packed dual-wall well screens and in the annular space between the outside of the pre-pack screen and borehole wall to ensure an adequate thickness of filter pack material between the well and the formation. Filter pack material placed in the annular space outside of the well screen extended approximately 2 feet above the top of screen. No bridging occurred during filter pack placement.

After placing the filter pack, the wells were pumped to ensure settlement of the filter pack, prior to installing the annular seal. The depth of top of filter pack was measured and recorded in the well construction log provided in Appendix A.

2.6 Annular Seal

Two to four feet of hydrated sodium bentonite overlies the filter pack. A high solid bentonite grout slurry was placed into the annual space from the bottom to the top with tremie pipe. A cement apron 4-feet by 4-feet by 4-inches was poured around the wells. The pads are mounded slightly outward to direct surface drainage away from the well.

2.7 Cap and Protective Casing

The well risers are fitted with a locking cap and a lockable cover. A one-quarter inch vent hole in the PVC riser pipe provides an avenue for the escape of gas. The protective cap guards the casing from damage and the locking cap serves as a security device to prevent well tampering. Bollards were installed around the corners of the wells to protect the wells from damage as necessary.

Wells are clearly marked with signage with the proper designation. A weep hole was drilled in the outer protective casing near the bottom above the concrete pad. Pea gravel was placed inside the protective casing between the riser pipe and the outer casing.

3.0 Well Development

The monitoring wells were developed using a combination of surging and pumping to (1) restore the natural hydraulic conductivity of the formation, and (2) to remove fine-grained sediment to ensure low- turbidity groundwater samples. The well was alternately surged and purged until visually clear of particulates. Turbidity, pH, temperature, and conductivity measurements were made to ensure that each well was fully developed. All equipment and tubing placed in the well was decontaminated or new. Development forms are included in Appendix D, Well Development Forms.

4.0 Survey

The horizontal and vertical location of the newly installed monitoring locations was surveyed by Southern Company Civil Field Services T&PS. under the direction of a Georgia Registered Land Surveyor (RLS). The horizontal location and vertical elevation of the wells were surveyed to the nearest, 0.01-foot. The elevations were measured on a survey pin embedded in the concrete pad, ground surface, and the top of PVC well casing. The survey for the new monitoring wells was completed On December 13, 2019. Elevations are referenced to mean sea level (MSL) in feet; depth is referenced from TOC in feet. Well coordinates are provided in Table 1. A site map depicting the surveyed locations is included in Figure 1; a survey data sheet sealed by a Georgia RLS is included in Appendix E, Survey Data. The well locations shown on Figure 1 have been referenced in the recent Groundwater Monitoring Plan.

5.0 General References

Georgia Environmental Protection Division, Georgia Department of Natural Resources. Manual for Groundwater Monitoring, September 1991.

TABLE

Table 1
Summary of Well Installation Dates, Coordinates, Elevation Screen Interval and Purpose

Well	Installation Date (mm/dd/yyyy)	Northing	Easting	Ground Elevation (ft MSL)	Top of Casing Elevation (ft MSL)	Top of Screen Elevation (ft MSL)	Bottom of Screen Elevation (ft MSL)	Total Depth (ft)	Purpose
ARGWC-22	11/19/2019	1,063,038.40	2,438,925.73	307.13	310.18	297.43	282.43	25.0	Expand monitoring network
ARGWC-23	11/20/2019	1,062,885.48	2,439,201.88	304.48	307.79	289.78	279.78	25.0	Expand monitoring network

Notes:
1. ft BTOC indicates feet below top of casing.
2. ft MSL indicates feet mean sea level.

TABLE

Table 1
Summary of Well Installation Dates, Coordinates, Elevation Screen Interval and Purpose

Well	Installation Date (mm/dd/yyyy)	Northing	Easting	Ground Elevation (ft MSL)	Top of Casing Elevation (ft MSL)	Top of Screen Elevation (ft MSL)	Bottom of Screen Elevation (ft MSL)	Total Depth (ft)	Purpose
ARGWC-22	11/19/2019	1,063,038.40	2,438,925.73	307.13	310.18	297.43	282.43	25.0	Expand monitoring network
ARGWC-23	11/20/2019	1,062,885.48	2,439,201.88	304.48	307.79	289.78	279.78	25.0	Expand monitoring network

Notes:
1. ft BTOC indicates feet below top of casing.
2. ft MSL indicates feet mean sea level.

FIGURE

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

PROJECT:

PLANT ARKWRIGHT

5001 ARKWRIGHT ROAD
MACON, GEORGIA

REVISIONS

Drawn by: RW

Checked by: MM

PROJECT NUMBER:

I054-110

January 2020

NEW WELL LOCATION MAP

FIGURE 1

\\ATLANTA1\Projects\Industrial\I054-Southern Company\110-Groundwater Consulting Services\Plant Arkwright\2019-11 Arkwright Well Install\DWG\Plant Arkwright AP-2 Locations - Assessment Wells.dwg 2020-02-07 EVAN PERRY

APPENDICES

APPENDIX A

Driller Bond Certificate

COPY

CONTINUATION CERTIFICATE

Atlantic Specialty Insurance Company , Surety upon

a certain Bond No. **800031223**

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

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

and in favor of State of Georgia
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on June 30, 2019
(MONTH-DAY-YEAR)

and ending on June 30, 2021
(MONTH-DAY-YEAR)

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

Description of bond Water Well Contractor Performance Bond

Premium: $1,200.00

PROVIDED: That this continuation certificate does not create a new obligation and is executed upon the express condition and provision that the Surety's liability under said bond and this and all Continuation Certificates issued in connection therewith shall not be cumulative and that the said Surety's aggregate liability under said bond and this and all such Continuation Certificates on account of all defaults committed during the period (regardless of the number of years) said bond had been and shall be in force, shall not in any event exceed the amount of said bond as hereinbefore set forth.

Signed and dated on May 9, 2019
(MONTH-DAY-YEAR)
Atlantic Specialty Insurance Company

By _____
Attorney-in-Fact Elizabeth R. Hahn

Parker, Smith & Feek, Inc.
Agent

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

(425) 709-3600
Telephone Number of Agent

S-0157/GE 8/08

XDP

OneBeacon
INSURANCE GROUP

Power of Attorney

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

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

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

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

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

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

ATLANTIC SPECIALTY INSURANCE COMPANY CORPORATE SEAL 1986 NEW YORK

By _____
Paul J. Brehm, Senior Vice President

STATE OF MINNESOTA
HENNEPIN COUNTY

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

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

_____
Notary Public

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

Signed and sealed. Dated 9 day of May 2019

ATLANTIC SPECIALTY INSURANCE COMPANY CORPORATE SEAL 1986 NEW YORK

This Power of Attorney expires
October 1, 2019

_____
Christopher V. Jerry, Secretary

APPENDIX B

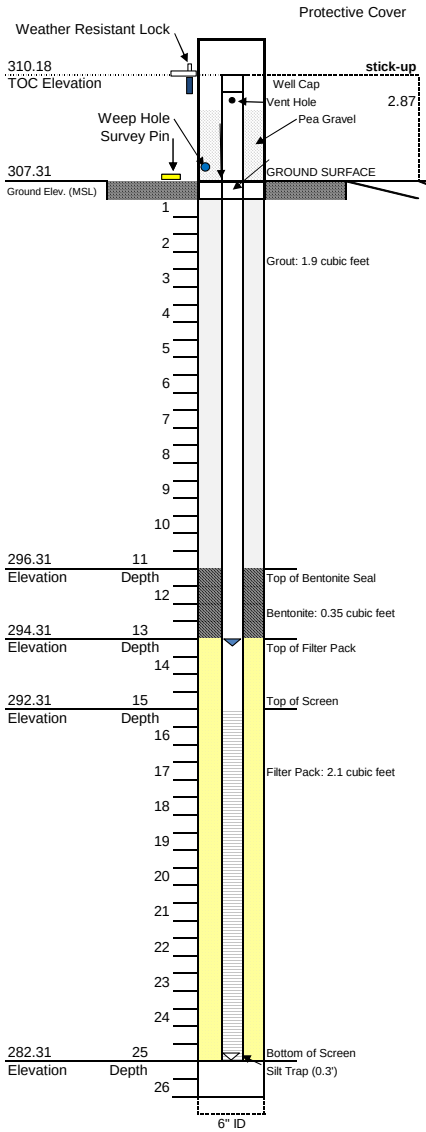
BORING AND WELL CONSTRUCTION LOGS

ATLANTIC COAST CONSULTING, INC.

ARGWC-22

BORING ID

PROJECT:	Plant Arkwright	**PROJECT NO.:**	I054-110
TOTAL DEPTH:	27.78 ft. BTOC	**SITE LOCATION:**	Macon, Georgia
DATE BEGIN:	19-Nov-2019	**DRILLER:**	Jaime Everson
DATE COMPLETE:	19-Nov-2019	**RIG TYPE:**	T-300 Rotosonic
INSTALLED BY:	Cascade	**METHOD:**	Rotosonic
SUPERVISED BY:	Taylor Goble		
WATER 1ST ENCOUNTERED:	10.95' BGS		
WATER AFTER 48 HOURS:	13.03' BTOC		



Northing: 1063038.395
Easting: 2438925.733

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

SOIL DESCRIPTION

0-10' Red silty clay (CL). Micaceous. Slight plasticity. Color change to a light brown/gray color at 7.0' BGS. Hand augered

10-15' Dark gray silty clay (CL). Wet at ~10' bgs. High plasticity. Micaceous

15-20' Dark gray silty sand (SC). Very coarse. Wet. Color change to a brown silty sand at ~17'. Sand grains remain course and wet. High plasticity

20-25' Brown silty sand (SC) with some gravel pieces. Change to gray coarse sand at ~22'. Wet. High plasticity.

Total well depth 25.0' BGS

Core Photos

MATERIALS:

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

Soil Descriptions from Unified Soil Classification System

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

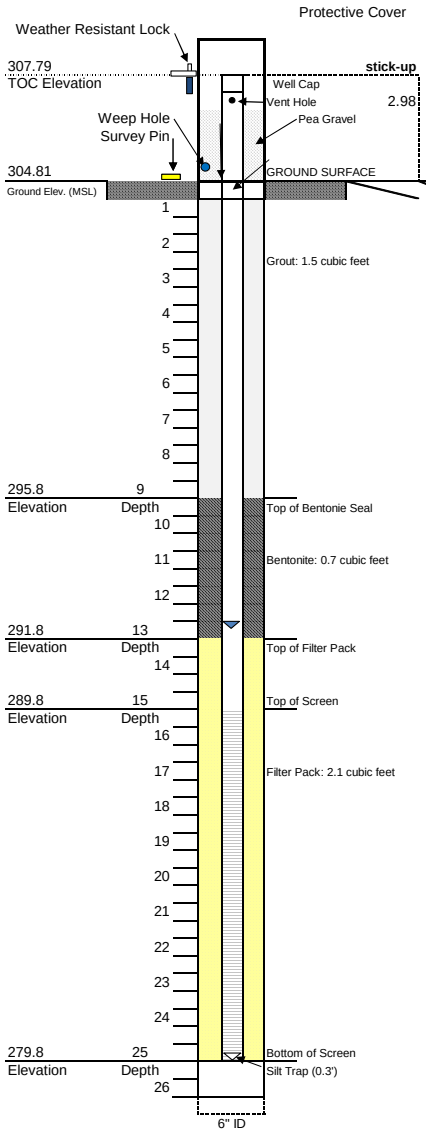
EVAN B. PERRY
GEORGIA REGISTERED PROFESSIONAL GEOLOGIST
No. 1744

ATLANTIC COAST CONSULTING, INC.

ARGWC-23

BORING ID

PROJECT:	Plant Arkwright	**PROJECT NO.:**	I054-110
TOTAL DEPTH:	27.21 ft. BTOC	**SITE LOCATION:**	Macon, Georgia
DATE BEGIN:	20-Nov-2019	**DRILLER:**	Isaac Young
DATE COMPLETE:	20-Nov-2019	**RIG TYPE:**	T-300 Rotosonic
INSTALLED BY:	Cascade	**METHOD:**	Rotosonic
SUPERVISED BY:	Taylor Goble		
WATER 1ST ENCOUNTERED:	10.95' BGS		
WATER AFTER 48 HOURS:	12.51' BTOC		



Northing: 1062885.484
Easting: 2439201.881

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

SOIL DESCRIPTION

0-9' Red silty clay (CL). Slight plasticity. Color change to a light brown at ~7.0 bgs. Hand augered

9-14' Light brown silty sand (SC). Micaceous. Dry. Progression to a darker brown silty sand at ~11' bgs. Moist after this point.

14-19' Dark brown/gold colored silty sand (SC). Moist. Mottled white and black.

19-25' Brown/gray silty sand (SC) with some gravel pieces. Moist. Progresses to a coarse gray sand at ~22. bgs. Very wet.

Total well depth 25.0' BGS

Core Photos

MATERIALS:

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

Soil Descriptions from Unified Soil Classification System

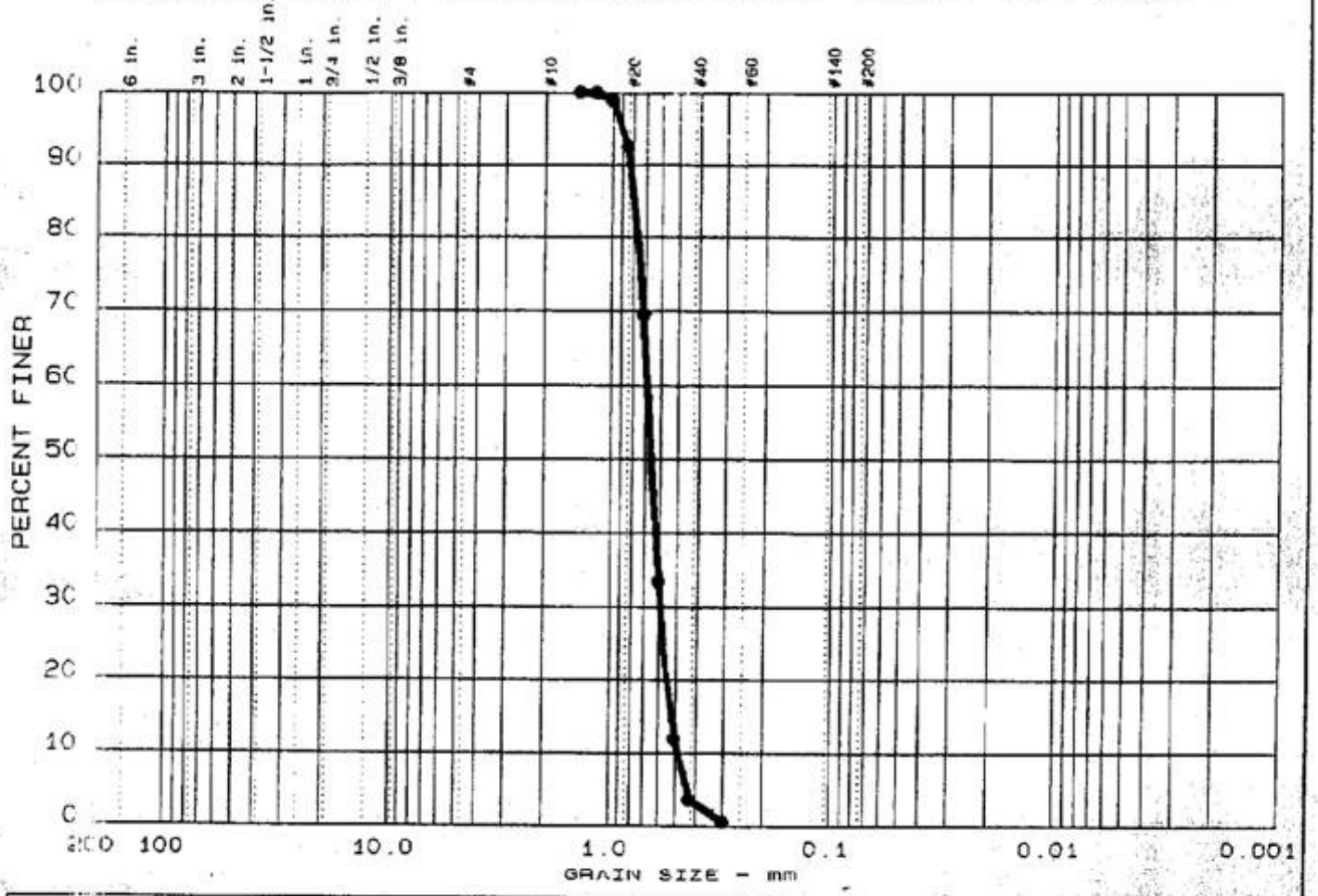
BTOC - Below Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

EVAN B. PERRY ★ GEORGIA REGISTERED PROFESSIONAL GEOLOGIST ★ No. 1744

APPENDIX C

FILTER PACK GRAIN SIZE CURVE

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	0.0	100.0		

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	ND	ND	0.78	0.68	0.65	0.588	0.5182	0.4814	1.06	1.4

MATERIAL DESCRIPTION	USCS	AASHTO
● WELL GRAVEL PACK #1	ND	ND

Project No.: 30774-2-5010-01
Project: SOUTHERN PRODUCTS & SILICA COMPANY
● Location: WELL GRAVEL PACK #1

Date: 01-22-02

GRAIN SIZE DISTRIBUTION TEST REPORT

LAW ENGINEERING, INC.

Remarks:

ND=NOT DETERMINED

Figure No. 01

REVIEWED BY: [signature]

APPENDIX D

WELL DEVELOPMENT FORMS

Product Name: Low-Flow System

Date: 2019-09-16 18:09:56

Project Information:		Pump Information:	
Operator Name	O. Fuquea	Pump Model/Type	whale
Company Name	ACC	Tubing Type	poly
Project Name	Arkwright	Tubing Diameter	.375 in
Site Name	Arkwright	Tubing Length	32 ft
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	369557		
Turbidity Make/Model	Hach 2100	Pump placement from TOC	27.78 ft

Well Information:		Pumping Information:	
Well ID	ARPZ-22	Final Pumping Rate	0 mL/min
Well diameter	2 in	Total System Volume	0.7849967 L
Well Total Depth	27.78 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	0 in
Depth to Water	14.03 ft	Total Volume Pumped	117.3 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 100	+/- 0.1	+/- 5%	+/- 100		+/- 0.2	+/- 100
Last 5	17:44:11	2400.02	18.50	5.81	1337.00	14.50	--	1.51	47.53
Last 5	17:49:11	2700.02	18.45	5.81	1337.01	3.99	--	1.43	46.34
Last 5	17:54:11	3000.02	18.51	5.82	1333.19	106.00	--	1.12	44.28
Last 5	17:59:11	3300.02	18.56	5.82	1331.35	9.35	--	1.24	43.02
Last 5	18:04:11	3600.02	18.59	5.82	1329.82	4.20	--	1.23	42.81
Variance 0			0.06	0.01	-3.82			-0.31	-2.06
Variance 1			0.06	-0.00	-1.84			0.13	-1.27
Variance 2			0.03	0.00	-1.53			-0.01	-0.21

Notes

Development start: 1331 end: 1447. WL start: 13.03 end: 21.5. BTOC start: 27.78 end: 17.78.

Grab Samples

Atlantic Coast Consulting, Inc.
Well Development Field Record

Job Name: ARKWRIGHT | Job No. 1054-110 T8 | Well No. ARPZ-22

Developed By: O. FUQUEA | Date of Installation: | Sheet 1 of 1

Started Dev. 12-2-19 1337 (Date / Time) | Completed Dev. 1443 12-2-19 (Date / Time)

W.L. Before Dev. 14.03 12-2-19 1331 (BTOC / Date / Time) | W.L. After Dev. 21.50 12-2-19 1447 (BTOC / Date / Time)

Well Depth Before Dev.: 27.78' BTOC | Well Depth After Dev.: 27.76 BTOC

Water Column (H): 13.75' Ft. | Well Dia.: 2" In. | Well Volume: 2.2 Gal. ×5 = 11 gal.

Screen Length: 10' Ft.

Date / Time	Volume Removed (Gal.)	Field Parameters: Specific Cond. (umhos/cm)	Temperature (oC)	pH (S.U.)	Turbidity (NTU)	Remarks
12-2 1349	5.75	1350	18.69	5.84	360	
1355	8.5	1346.5	18.6	5.85	112	
1400	11	1333.9	18.6	5.88	159	
1404	14	1346.1	18.5	5.85	55.7	
1409	17	1339.8	18.5	5.83	22	
1420	21	1338.4	18.5	5.82	11.4	
1425	22.5	1337	18.5	5.81	14.5	
1429	25	1337	18.5	5.81	3.99	Resurge w/ pump
1433	26.5	1333.2	18.5	5.82	106	
1439	29	1331.3	18.56	5.82	9.35	
1443	31	1329.8	18.59	5.87	4.20	Development complete

Development Method: Surge w/ surge blocker & foot valve, purge w/ whale pump until <5 NTU. Resurge w/ pump, purge until <5 NTU.

Notes: H = well depth (BTOC) - W.L. (BTOC)

Well volume in pipe:

2" diameter well: 0.16 X H = volume in gallons

4" diameter well: 0.66 X H = voume in gallons

1HT

Product Name: Low-Flow System

Date: 2019-12-02 16:55:05

Project Information:		Pump Information:	
Operator Name	Anna Schnittker	Pump Model/Type	Whale
Company Name	ACC	Tubing Type	poly
Project Name	Arkwright	Tubing Diameter	.37 in
Site Name	Default Site	Tubing Length	34 ft
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	445707		
Turbidity Make/Model	Hach 2100	Pump placement from TOC	27 ft

Well Information:		Pumping Information:	
Well ID	ARPZ-23	Final Pumping Rate	0 mL/min
Well diameter	2 in	Total System Volume	0.8088737 L
Well Total Depth	27.21 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	0 in
Depth to Water	12.51 ft	Total Volume Pumped	0 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 10	+/- 0.1	+/- 5%	+/- 100		+/- 0.2	+/- 100
Last 5	16:31:31	3299.88	19.67	6.73	470.25	43.30	--	3.27	-99.57
Last 5	16:36:31	3599.88	19.59	6.74	469.10	38.20	--	3.15	-99.18
Last 5	16:41:31	3899.88	19.77	6.72	473.21	13.50	--	3.41	-94.74
Last 5	16:46:31	4199.88	19.69	6.70	475.20	12.70	--	3.43	-91.80
Last 5	16:51:31	4499.88	19.47	6.70	472.51	1000.00	--	3.45	-88.81
Variance 0			0.18	-0.02	4.11			0.26	4.44
Variance 1			-0.08	-0.01	1.99			0.02	2.93
Variance 2			-0.23	-0.00	-2.69			0.02	2.99

Notes

Day 1. Start 15:10. WL: 12.51

Grab Samples

Atlantic Coast Consulting, Inc.
Well Development Field Record

Job Name: Arkwright | Job No. 1054-110-T8 | Well No. ARPZ-23

Developed By: A Schaffner | Date of Installation: | Sheet 1 of 3

Started Dev. 12/02/19 ~~1440~~ 1510 (Date / Time) | Completed Dev. 12/03/19 11:45 (Date / Time)

W.L. Before Dev. 12.51 12/2/19 1428 (BTOC / Date / Time) | W.L. After Dev. 15.21 12/03/19 11:45 (BTOC / Date / Time)

Well Depth Before Dev.: 27.21 BTOC | Well Depth After Dev.: 28.10 BTOC

Water Column (H): 14.7 Ft. | Well Dia.: 2 In. | Well Volume: 2.35 Gal.

Screen Length: 10 Ft. | x5 = 11.75

Date / Time	Volume Removed (Gal.)	Field Parameters: Specific Cond. (umhos/cm)	Temperature (oC)	pH (S.U.)	Turbidity (NTU)	Remarks
1540	6	N/A	N/A	N/A	730	Began @ 1510
1541	7	442.6	20.17	7.10	112	>1000 Turbidity + Trouble
1546	9	441.7	19.95	7.10	46.6	flowing
1551	10	446.5	19.85	6.95	>1000	
1556	11	450.8	20.13	6.9	>1000	
1601	11	447.4	20.00	6.88	>1000	
1606	12	462.2	19.56	6.95	194	
1611	12.5	464.4	20.00	6.8	205	
1616	13.5	461	19.15	6.98	>1000	
1621	14.0	468.9	20.00	6.81	534	
1627	16	471.5	19.89	6.70	130	
1631	17	470.2	19.67	6.73	43.3	
1637	18	469.1	19.59	6.74	38.2	
1641	19	473.2	19.77	6.72	13.5	
1647	20	475.2	19.69	6.70	12.7	
1651	22	472	19.47	6.70	>1000	
0835	24	472.4	19.68	6.84	315	WL 13.71 Resume 12/3/19 8:30
0840	25	487.1	19.79	6.69	267	
0845	26	480.9	19.72	6.70	170	

Development Method:

Surge w/ surge blocker + foot valve. Then pump w/ submersible while pump for 56 gal until NTU < 5

Notes: H = well depth (BTOC) - W.L. (BTOC)

Well volume in pipe:

2" diameter well: 0.16 X H = volume in gallons

4" diameter well: 0.66 X H = voume in gallons

1111

Atlantic Coast Consulting, Inc.
Well Development Field Record

Job Name: Arkwright | Job No. | Well No. ARPZ-23

Developed By: A Schnitker | Date of Installation: | Sheet 2 of 3

Started Dev. 12/02/19 1510 (Date / Time) | Completed Dev. 12/03/19 11:45 (Date / Time)

W.L. Before Dev. 12.51 12/02/19 1428 (BTOC / Date / Time) | W.L. After Dev. 15.21 12/03/19 1155 (BTOC / Date / Time)

Well Depth Before Dev.: 27.21 BTOC | Well Depth After Dev.: 28.10 BTOC

Water Column (H): 14.7 Ft. | Well Dia.: 2 In. | Well Volume: 2.35 Gal.

Screen Length: 10 Ft. | ×5 = 11.75

Date / Time	Volume Removed (Gal.)	Field Parameters: Specific Cond. (umhos/cm)	Temperature (oC)	pH (S.U.)	Turbidity (NTU)	Remarks
0850	27	488.2	19.73	6.72	59.5	
0855	28	487.3	19.68	6.73	24.1	
0900	29	487.7	19.66	6.71	86.0	
0905	30	485.9	19.71	6.70	23.1	
0910	31	485.2	19.82	6.69	16.0	
0915	32	488.60	~~19.82~~ 19.69	6.67	188	
0920	33	479.2	19.84	6.66	32.8	
0925	34	478.30	19.68	6.65	11.4	
0930	35	481.3	19.61	6.64	8.78	
0935	—	—	—	—	—	— Pump Malfunction 9:35-10:05
0940	—	—	—	—	—	
0945	—	—	—	—	—	
0950	—	—	—	—	—	
0955	—	—	—	—	—	
1000	—	—	—	—	—	Resume pumping
1005	—	—	—	—	—	
1010	35.5	N/A	20.21	6.83	85.7	
1015	36.0	494.5	20.3	6.60	143	
1020	38.0	488.1	20.32	6.69	130	

Development Method:

Surge w/ surge blocker + foot valve. Then pump w/ submersible whale pump for 516 gal until NTU < 5.

Notes: H = well depth (BTOC) - W.L. (BTOC)

Well volume in pipe:

2" diameter well: 0.16 X H = volume in gallons

4" diameter well: 0.66 X H = voume in gallons

HH 1

Atlantic Coast Consulting, Inc.
Well Development Field Record

Job Name: Arkwright | Job No. | Well No. ARPZ-23

Developed By: A Schnitker | Date of Installation: | Sheet 3 of 3

Started Dev. 12/02/19 1510 (Date / Time) | Completed Dev. 12/03/19 1200 (Date / Time)

W.L. Before Dev. 12.61 12/02/19 1428 (BTOC / Date / Time) | W.L. After Dev. 15.21 12/3/19 1145 (BTOC / Date / Time)

Well Depth Before Dev.: 27.21 BTOC | Well Depth After Dev.: 28.10 BTOC

Water Column (H): 14.7 Ft. | Well Dia.: 2 In. | Well Volume: 2.35 Gal. x5 = 11.75

Screen Length: 10 Ft.

Date / Time	Volume Removed (Gal.)	Field Parameters: Specific Cond. (umhos/cm)	Temperature (oC)	pH (S.U.)	Turbidity (NTU)	Remarks
1025	39	488.10	20.39	6.68	139	
1030	40	483.1	20.39	6.68	72.6	
1035	41	471.7	20.53	6.70	44.1	
1040	42	485.1	20.04	6.68	16.4	
1045	43	484.7	20.30	6.67	7.93	
1050	44	484.8	20.24	6.65	6.88	
1055	45	481.3	20.32	6.63	5.51	
1100	46	478.8	20.17	6.61	9.56	
1105	47	479.3	20.32	6.60	10.6	
1110	48	479.4	20.3	6.59	8.52	
1115	49	465.5	20.34	6.58	14.5	
1120	50	482.5	20.23	6.60	17.9	
1125	51	485.5	20.44	6.58	23.0	
1130	53	485.2	20.42	6.57	20.1	
1135	54	Machine	didn't Take	reading	9.57	
1140	55	485.2	20.42	6.57	4.50	
1145	56	483.0	20.43	6.57	3.71	Development complete

Development Method:

Surge w/ surge blocker + foot valve. Then pump w/ submersible whale pump for 56 gal until NTU < 5.

Notes: H = well depth (BTOC) - W.L. (BTOC)

Well volume in pipe:

2" diameter well: 0.16 X H = volume in gallons

4" diameter well: 0.66 X H = voume in gallons

APPENDIX E

SURVEY DATA

ARKWRIGHT PIEZOMETER AND MONITORING WELLS 12-13-2019

FIELD WORK 12-13-2019 BY FL BULLARD & FRANK KENNEY T&PS CIVIL FIELD SERVICES

NAD 83 GEORGIA WEST ZONE, NAVD 1988, LAT-LONG, NORTHING & EASTING ARE FOR THE NAIL IN THE CONCRETE PAD

PIEZOMETER ID	LATITUDE DD	LONGITUDE DD	NAD 83 NORTHING	NAD 83 EASTING	ELEVATION TOP NAIL	ELEVATION TOP OF PVC	COMMENTS	ELEVATION GROUND
ARAMW1	32.9214266	83.7021468	1,062,937.14	2,439,119.67	334.48	337.46	AP2	334.38
ARAMW2	32.9213986	83.7021615	1,062,926.91	2,439,115.22	305.47	308.52	AP2	305.47
ARAMW3	32.9258269	83.7071719	1,064,531.31	2,437,570.76	352.38	355.35	AP2	352.35
ARAMW4	32.9283825	83.7057470	1,065,462.99	2,438,003.90	364.61	367.61	AP3	364.40
ARAMW6	32.9255748	83.7070522	1,064,439.75	2,437,607.88	334.48	337.34	AP3	334.47
ARPZ23	32.9212837	83.7018796	1,062,885.48	2,439,201.88	304.81	307.79	AP3	304.48
ARPZ22	32.9217073	83.7027774	1,063,038.40	2,438,925.73	307.31	310.18	AP3	307.13

GEORGIA REGISTERED No.2269 PROFESSIONAL LAND SURVEYOR F.L. BULLARD

12-20-2019

SURVEY DATA CERTIFICATION FOR SOUTHERN COMPANY TO DETERMINE NORTHING, EASTING AND VERTICAL ELEVATION OF THE NAIL AS LISTED ABOVE
DATE OF FIELD SURVEY & INSPECTION 12-13-2019
FIELD SURVEY POSITIONAL TOLERANCE = 0.5 FEET HORIZONTAL-NAD 83, 0.1 FEET VERTICAL-NAD88
EQUIPMENT USED TO RECORD DATA, LEICA (GPS) GS14 ANTENNA AND CS15 SENSOR

APPENDIX B

Laboratory Analytical and Field Sampling Reports

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-94596-1
Laboratory Sample Delivery Group: 1
Client Project/Site: CCR - Plant Arkwright Ash Pond 2
Sampling Event: PLANTARKWRIGHT - AP-2

For:
Southern Company
241 Ralph McGill Blvd SE
B10185
Atlanta, Georgia 30308

Attn: Joju Abraham

Veronica Bortot

Authorized for release by:
9/12/2019 4:28:29 PM

Veronica Bortot, Senior Project Manager
(412)963-2435
veronica.bortot@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

PA Lab ID: 02-00416

Table of Contents

Case Narrative

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-94596-1
SDG: 1

Job ID: 180-94596-1

Laboratory: Eurofins TestAmerica, Pittsburgh

Narrative

Job Narrative
180-94596-1

Comments
No additional comments.

Receipt
The samples were received on 8/23/2019 8:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 0.9º C, 1.0º C, 1.1º C, 2.3º C and 2.4º C.

GC Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Definitions/Glossary

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-94596-1
SDG: 1

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Accreditation/Certification Summary

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-94596-1
SDG: 1

Laboratory: Eurofins TestAmerica, Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	19-033-0	06-27-20
Arkansas DEQ	State Program	88-0690	06-27-20
California	State	2891	04-30-20
California	State Program	2891	04-30-20
Connecticut	State	PH-0688	09-30-20
Connecticut	State Program	PH-0688	09-30-20
Florida	NELAP	E871008	06-30-20
Florida	NELAP	E871008	06-30-20
Illinois	NELAP	200005	06-30-20
Illinois	NELAP	004375	06-30-20
Kansas	NELAP	E-10350	01-31-20
Kansas	NELAP	E-10350	03-31-20
Kentucky (UST)	State Program	162013	04-30-20
Kentucky (WW)	State	KY98043	12-31-19
Kentucky (WW)	State Program	KY98043	12-31-19
Louisiana	NELAP	04041	06-30-20
Minnesota	NELAP	042-999-482	12-31-19
Minnesota	NELAP	042-999-482	12-31-19
Nevada	State	PA00164	07-31-20
Nevada	State Program	PA00164	07-31-20
New Hampshire	NELAP	2030	04-04-20
New Jersey	NELAP	PA005	06-30-20
New Jersey	NELAP	PA005	06-30-20
New York	NELAP	11182	03-31-20
New York	NELAP	11182	04-01-20
North Carolina (WW/SW)	State Program	434	12-31-19
North Dakota	State	R-227	04-30-20
North Dakota	State Program	R-227	04-30-20
Oregon	NELAP	PA-2151	02-06-20
Oregon	NELAP	PA-2151	02-06-20
Pennsylvania	NELAP	02-00416	04-30-20
Pennsylvania	NELAP	02-00416	04-30-20
Rhode Island	State	LAO00362	12-30-19
Rhode Island	State Program	LAO00362	12-30-19
South Carolina	State Program	89014	04-30-20
Texas	NELAP	T104704528-15-2	03-31-20
Texas	NELAP	T104704528	03-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	Federal	P-Soil-01	06-26-22
USDA	US Federal Programs	P330-16-00211	06-26-22
Utah	NELAP	PA001462015-4	05-31-20
Utah	NELAP	PA001462019-8	05-31-20
Virginia	NELAP	460189	09-14-19
Virginia	NELAP	10043	09-14-19
West Virginia DEP	State	142	01-31-20
West Virginia DEP	State Program	142	01-31-20
Wisconsin	State	998027800	08-31-20
Wisconsin	State Program	998027800	08-31-20

Sample Summary

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-94596-1
SDG: 1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
180-94596-1	ARGWA-19	Water	08/20/19 13:26	08/23/19 08:40	
180-94596-2	ARGWA-20	Water	08/20/19 09:54	08/23/19 08:40	
180-94596-3	ARGWC-21	Water	08/20/19 15:12	08/23/19 08:40	
180-94596-4	EB-2-20-19	Water	08/20/19 15:25	08/23/19 08:40	
180-94596-5	FB-2-20-19	Water	08/20/19 13:45	08/23/19 08:40	
180-94596-6	DUP-2	Water	08/20/19 00:00	08/23/19 08:40	

Method Summary

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-94596-1
SDG: 1

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL PIT
EPA 6020	Metals (ICP/MS)	SW846	TAL PIT
EPA 7470A	Mercury (CVAA)	SW846	TAL PIT
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL PIT
7470A	Preparation, Mercury	SW846	TAL PIT

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL PIT = Eurofins TestAmerica, Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Lab Chronicle

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-94596-1
SDG: 1

Client Sample ID: ARGWA-19
Date Collected: 08/20/19 13:26
Date Received: 08/23/19 08:40

Lab Sample ID: 180-94596-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			290138	09/04/19 17:50	CMR	TAL PIT
	Instrument ID: CHICS2000									
Total Recoverable	Prep	3005A			50 mL	50 mL	289413	08/27/19 10:33	KAK	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			290864	09/10/19 19:18	RSK	TAL PIT
	Instrument ID: A									
Total/NA	Prep	7470A			50 mL	50 mL	289568	08/28/19 11:36	MM1	TAL PIT
Total/NA	Analysis	EPA 7470A		1			289762	08/29/19 17:10	KAK	TAL PIT
	Instrument ID: HGZ									

Client Sample ID: ARGWA-20
Date Collected: 08/20/19 09:54
Date Received: 08/23/19 08:40

Lab Sample ID: 180-94596-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			290138	09/04/19 18:35	CMR	TAL PIT
	Instrument ID: CHICS2000									
Total Recoverable	Prep	3005A			50 mL	50 mL	289413	08/27/19 10:33	KAK	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			290864	09/10/19 19:21	RSK	TAL PIT
	Instrument ID: A									
Total/NA	Prep	7470A			50 mL	50 mL	289568	08/28/19 11:36	MM1	TAL PIT
Total/NA	Analysis	EPA 7470A		1			289762	08/29/19 17:11	KAK	TAL PIT
	Instrument ID: HGZ									

Client Sample ID: ARGWC-21
Date Collected: 08/20/19 15:12
Date Received: 08/23/19 08:40

Lab Sample ID: 180-94596-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			290138	09/04/19 18:50	CMR	TAL PIT
	Instrument ID: CHICS2000									
Total Recoverable	Prep	3005A			50 mL	50 mL	289413	08/27/19 10:33	KAK	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			290864	09/10/19 19:25	RSK	TAL PIT
	Instrument ID: A									
Total/NA	Prep	7470A			50 mL	50 mL	289568	08/28/19 11:36	MM1	TAL PIT
Total/NA	Analysis	EPA 7470A		1			289762	08/29/19 17:12	KAK	TAL PIT
	Instrument ID: HGZ									

Client Sample ID: EB-2-20-19
Date Collected: 08/20/19 15:25
Date Received: 08/23/19 08:40

Lab Sample ID: 180-94596-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			290138	09/04/19 19:04	CMR	TAL PIT
	Instrument ID: CHICS2000									

Lab Chronicle

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-94596-1
SDG: 1

Client Sample ID: EB-2-20-19
Date Collected: 08/20/19 15:25
Date Received: 08/23/19 08:40

Lab Sample ID: 180-94596-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	289413	08/27/19 10:33	KAK	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			290864	09/10/19 19:28	RSK	TAL PIT
	Instrument ID: A									
Total/NA	Prep	7470A			50 mL	50 mL	289568	08/28/19 11:36	MM1	TAL PIT
Total/NA	Analysis	EPA 7470A		1			289762	08/29/19 17:13	KAK	TAL PIT
	Instrument ID: HGZ									

Client Sample ID: FB-2-20-19
Date Collected: 08/20/19 13:45
Date Received: 08/23/19 08:40

Lab Sample ID: 180-94596-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			290138	09/04/19 19:19	CMR	TAL PIT
	Instrument ID: CHICS2000									
Total Recoverable	Prep	3005A			50 mL	50 mL	289414	08/27/19 10:34	KAK	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			290747	09/07/19 14:47	RSK	TAL PIT
	Instrument ID: A									
Total/NA	Prep	7470A			50 mL	50 mL	289568	08/28/19 11:36	MM1	TAL PIT
Total/NA	Analysis	EPA 7470A		1			289762	08/29/19 17:14	KAK	TAL PIT
	Instrument ID: HGZ									

Client Sample ID: DUP-2
Date Collected: 08/20/19 00:00
Date Received: 08/23/19 08:40

Lab Sample ID: 180-94596-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			290138	09/04/19 20:04	CMR	TAL PIT
	Instrument ID: CHICS2000									
Total Recoverable	Prep	3005A			50 mL	50 mL	289414	08/27/19 10:34	KAK	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			290747	09/07/19 14:51	RSK	TAL PIT
	Instrument ID: A									
Total/NA	Prep	7470A			50 mL	50 mL	289568	08/28/19 11:36	MM1	TAL PIT
Total/NA	Analysis	EPA 7470A		1			289762	08/29/19 17:20	KAK	TAL PIT
	Instrument ID: HGZ									

Laboratory References:

TAL PIT = Eurofins TestAmerica, Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Analyst References:

Lab: TAL PIT

Batch Type: Prep

KAK = Kayla Kalamasz

MM1 = Mary Beth Miller

Batch Type: Analysis

CMR = Carl Reagle

KAK = Kayla Kalamasz

RSK = Robert Kurtz

Client Sample ID: ARGWA-19

Lab Sample ID: 180-94596-1
Date Collected: 08/20/19 13:26
Matrix: Water
Date Received: 08/23/19 08:40

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.045	J	0.20	0.026	mg/L			09/04/19 17:50	1

Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00036	J	0.0010	0.00032	mg/L		08/27/19 10:33	09/10/19 19:18	1
Barium	0.052		0.010	0.0016	mg/L		08/27/19 10:33	09/10/19 19:18	1
Beryllium	<0.00018		0.0010	0.00018	mg/L		08/27/19 10:33	09/10/19 19:18	1
Cadmium	<0.00013		0.0010	0.00013	mg/L		08/27/19 10:33	09/10/19 19:18	1
Cobalt	0.00011	J	0.00050	0.000075	mg/L		08/27/19 10:33	09/10/19 19:18	1
Chromium	0.0024		0.0020	0.0015	mg/L		08/27/19 10:33	09/10/19 19:18	1
Molybdenum	<0.00061		0.0050	0.00061	mg/L		08/27/19 10:33	09/10/19 19:18	1
Lead	<0.00013		0.0010	0.00013	mg/L		08/27/19 10:33	09/10/19 19:18	1
Antimony	<0.00038		0.0020	0.00038	mg/L		08/27/19 10:33	09/10/19 19:18	1
Selenium	<0.0015		0.0050	0.0015	mg/L		08/27/19 10:33	09/10/19 19:18	1
Thallium	<0.00015		0.0010	0.00015	mg/L		08/27/19 10:33	09/10/19 19:18	1
Lithium	0.0044	J	0.0050	0.0034	mg/L		08/27/19 10:33	09/10/19 19:18	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		08/28/19 11:36	08/29/19 17:10	1

Client Sample ID: ARGWA-20

Lab Sample ID: 180-94596-2
Date Collected: 08/20/19 09:54
Matrix: Water
Date Received: 08/23/19 08:40

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.042	J	0.20	0.026	mg/L			09/04/19 18:35	1

Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00047	J	0.0010	0.00032	mg/L		08/27/19 10:33	09/10/19 19:21	1
Barium	0.079		0.010	0.0016	mg/L		08/27/19 10:33	09/10/19 19:21	1
Beryllium	<0.00018		0.0010	0.00018	mg/L		08/27/19 10:33	09/10/19 19:21	1
Cadmium	<0.00013		0.0010	0.00013	mg/L		08/27/19 10:33	09/10/19 19:21	1
Cobalt	0.00015	J	0.00050	0.000075	mg/L		08/27/19 10:33	09/10/19 19:21	1
Chromium	0.0078		0.0020	0.0015	mg/L		08/27/19 10:33	09/10/19 19:21	1
Molybdenum	<0.00061		0.0050	0.00061	mg/L		08/27/19 10:33	09/10/19 19:21	1
Lead	<0.00013		0.0010	0.00013	mg/L		08/27/19 10:33	09/10/19 19:21	1
Antimony	<0.00038		0.0020	0.00038	mg/L		08/27/19 10:33	09/10/19 19:21	1
Selenium	0.0015	J	0.0050	0.0015	mg/L		08/27/19 10:33	09/10/19 19:21	1
Thallium	<0.00015		0.0010	0.00015	mg/L		08/27/19 10:33	09/10/19 19:21	1
Lithium	<0.0034		0.0050	0.0034	mg/L		08/27/19 10:33	09/10/19 19:21	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		08/28/19 11:36	08/29/19 17:11	1

Client Sample ID: ARGWC-21

Date Collected: 08/20/19 15:12
Date Received: 08/23/19 08:40

Lab Sample ID: 180-94596-3

Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	**0.098**	**J**	0.20	0.026	mg/L			09/04/19 18:50	1

Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0020**		0.0010	0.00032	mg/L		08/27/19 10:33	09/10/19 19:25	1
Barium	**0.10**		0.010	0.0016	mg/L		08/27/19 10:33	09/10/19 19:25	1
Beryllium	<0.00018		0.0010	0.00018	mg/L		08/27/19 10:33	09/10/19 19:25	1
Cadmium	<0.00013		0.0010	0.00013	mg/L		08/27/19 10:33	09/10/19 19:25	1
Cobalt	**0.0023**		0.00050	0.000075	mg/L		08/27/19 10:33	09/10/19 19:25	1
Chromium	**0.0017**	**J**	0.0020	0.0015	mg/L		08/27/19 10:33	09/10/19 19:25	1
Molybdenum	<0.00061		0.0050	0.00061	mg/L		08/27/19 10:33	09/10/19 19:25	1
Lead	<0.00013		0.0010	0.00013	mg/L		08/27/19 10:33	09/10/19 19:25	1
Antimony	<0.00038		0.0020	0.00038	mg/L		08/27/19 10:33	09/10/19 19:25	1
Selenium	<0.0015		0.0050	0.0015	mg/L		08/27/19 10:33	09/10/19 19:25	1
Thallium	<0.00015		0.0010	0.00015	mg/L		08/27/19 10:33	09/10/19 19:25	1
Lithium	**0.0098**		0.0050	0.0034	mg/L		08/27/19 10:33	09/10/19 19:25	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		08/28/19 11:36	08/29/19 17:12	1

Client Sample ID: EB-2-20-19

Date Collected: 08/20/19 15:25
Date Received: 08/23/19 08:40

Lab Sample ID: 180-94596-4

Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	**0.039**	**J**	0.20	0.026	mg/L			09/04/19 19:04	1

Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.00052**	**J**	0.0010	0.00032	mg/L		08/27/19 10:33	09/10/19 19:28	1
Barium	<0.0016		0.010	0.0016	mg/L		08/27/19 10:33	09/10/19 19:28	1
Beryllium	<0.00018		0.0010	0.00018	mg/L		08/27/19 10:33	09/10/19 19:28	1
Cadmium	<0.00013		0.0010	0.00013	mg/L		08/27/19 10:33	09/10/19 19:28	1
Cobalt	<0.000075		0.00050	0.000075	mg/L		08/27/19 10:33	09/10/19 19:28	1
Chromium	**0.0023**		0.0020	0.0015	mg/L		08/27/19 10:33	09/10/19 19:28	1
Molybdenum	<0.00061		0.0050	0.00061	mg/L		08/27/19 10:33	09/10/19 19:28	1
Lead	<0.00013		0.0010	0.00013	mg/L		08/27/19 10:33	09/10/19 19:28	1
Antimony	<0.00038		0.0020	0.00038	mg/L		08/27/19 10:33	09/10/19 19:28	1
Selenium	<0.0015		0.0050	0.0015	mg/L		08/27/19 10:33	09/10/19 19:28	1
Thallium	<0.00015		0.0010	0.00015	mg/L		08/27/19 10:33	09/10/19 19:28	1
Lithium	<0.0034		0.0050	0.0034	mg/L		08/27/19 10:33	09/10/19 19:28	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		08/28/19 11:36	08/29/19 17:13	1

Client Sample ID: FB-2-20-19

Lab Sample ID: 180-94596-5

Date Collected: 08/20/19 13:45
Matrix: Water
Date Received: 08/23/19 08:40

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	**0.027**	**J**	0.20	0.026	mg/L			09/04/19 19:19	1

Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0010	0.00032	mg/L		08/27/19 10:34	09/07/19 14:47	1
Barium	<0.0016		0.010	0.0016	mg/L		08/27/19 10:34	09/07/19 14:47	1
Beryllium	<0.00018		0.0010	0.00018	mg/L		08/27/19 10:34	09/07/19 14:47	1
Cadmium	<0.00013		0.0010	0.00013	mg/L		08/27/19 10:34	09/07/19 14:47	1
Cobalt	<0.000075		0.00050	0.000075	mg/L		08/27/19 10:34	09/07/19 14:47	1
Chromium	<0.0015		0.0020	0.0015	mg/L		08/27/19 10:34	09/07/19 14:47	1
Molybdenum	<0.00061		0.0050	0.00061	mg/L		08/27/19 10:34	09/07/19 14:47	1
Lead	<0.00013		0.0010	0.00013	mg/L		08/27/19 10:34	09/07/19 14:47	1
Antimony	<0.00038		0.0020	0.00038	mg/L		08/27/19 10:34	09/07/19 14:47	1
Selenium	<0.0015		0.0050	0.0015	mg/L		08/27/19 10:34	09/07/19 14:47	1
Thallium	<0.00015		0.0010	0.00015	mg/L		08/27/19 10:34	09/07/19 14:47	1
Lithium	<0.0034		0.0050	0.0034	mg/L		08/27/19 10:34	09/07/19 14:47	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		08/28/19 11:36	08/29/19 17:14	1

Client Sample ID: DUP-2

Lab Sample ID: 180-94596-6

Date Collected: 08/20/19 00:00
Matrix: Water
Date Received: 08/23/19 08:40

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	**0.031**	**J**	0.20	0.026	mg/L			09/04/19 20:04	1

Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0010	0.00032	mg/L		08/27/19 10:34	09/07/19 14:51	1
Barium	**0.085**		0.010	0.0016	mg/L		08/27/19 10:34	09/07/19 14:51	1
Beryllium	<0.00018		0.0010	0.00018	mg/L		08/27/19 10:34	09/07/19 14:51	1
Cadmium	<0.00013		0.0010	0.00013	mg/L		08/27/19 10:34	09/07/19 14:51	1
Cobalt	<0.000075		0.00050	0.000075	mg/L		08/27/19 10:34	09/07/19 14:51	1
Chromium	**0.0071**		0.0020	0.0015	mg/L		08/27/19 10:34	09/07/19 14:51	1
Molybdenum	<0.00061		0.0050	0.00061	mg/L		08/27/19 10:34	09/07/19 14:51	1
Lead	<0.00013		0.0010	0.00013	mg/L		08/27/19 10:34	09/07/19 14:51	1
Antimony	<0.00038		0.0020	0.00038	mg/L		08/27/19 10:34	09/07/19 14:51	1
Selenium	**0.0015**	**J**	0.0050	0.0015	mg/L		08/27/19 10:34	09/07/19 14:51	1
Thallium	<0.00015		0.0010	0.00015	mg/L		08/27/19 10:34	09/07/19 14:51	1
Lithium	<0.0034		0.0050	0.0034	mg/L		08/27/19 10:34	09/07/19 14:51	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		08/28/19 11:36	08/29/19 17:20	1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 180-290138/32
Matrix: Water
Analysis Batch: 290138

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.026		0.20	0.026	mg/L			09/04/19 17:35	1

Lab Sample ID: LCS 180-290138/31
Matrix: Water
Analysis Batch: 290138

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	1.25	1.26		mg/L		101	90 - 110

Lab Sample ID: 180-94596-1 MS
Matrix: Water
Analysis Batch: 290138

Client Sample ID: ARGWA-19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	0.045	J	1.25	1.25		mg/L		97	80 - 120

Lab Sample ID: 180-94596-1 MSD
Matrix: Water
Analysis Batch: 290138

Client Sample ID: ARGWA-19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	0.045	J	1.25	1.26		mg/L		97	80 - 120	0	20

Method: EPA 6020 - Metals (ICP/MS)

Lab Sample ID: MB 180-289413/1-A
Matrix: Water
Analysis Batch: 290864

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 289413

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0010	0.00032	mg/L		08/27/19 10:33	09/10/19 17:54	1
Barium	<0.0016		0.010	0.0016	mg/L		08/27/19 10:33	09/10/19 17:54	1
Beryllium	<0.00018		0.0010	0.00018	mg/L		08/27/19 10:33	09/10/19 17:54	1
Cadmium	<0.00013		0.0010	0.00013	mg/L		08/27/19 10:33	09/10/19 17:54	1
Cobalt	<0.000075		0.00050	0.000075	mg/L		08/27/19 10:33	09/10/19 17:54	1
Chromium	<0.0015		0.0020	0.0015	mg/L		08/27/19 10:33	09/10/19 17:54	1
Molybdenum	<0.00061		0.0050	0.00061	mg/L		08/27/19 10:33	09/10/19 17:54	1
Lead	<0.00013		0.0010	0.00013	mg/L		08/27/19 10:33	09/10/19 17:54	1
Antimony	<0.00038		0.0020	0.00038	mg/L		08/27/19 10:33	09/10/19 17:54	1
Selenium	<0.0015		0.0050	0.0015	mg/L		08/27/19 10:33	09/10/19 17:54	1
Thallium	<0.00015		0.0010	0.00015	mg/L		08/27/19 10:33	09/10/19 17:54	1
Lithium	<0.0034		0.0050	0.0034	mg/L		08/27/19 10:33	09/10/19 17:54	1

Lab Sample ID: LCS 180-289413/2-A
Matrix: Water
Analysis Batch: 290864

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 289413

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	1.08		mg/L		108	80 - 120
Barium	1.00	0.999		mg/L		100	80 - 120

Method: EPA 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 180-289413/2-A
Matrix: Water
Analysis Batch: 290864

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 289413

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Beryllium	0.500	0.480		mg/L		96	80 - 120
Cadmium	0.500	0.521		mg/L		104	80 - 120
Cobalt	0.500	0.533		mg/L		107	80 - 120
Chromium	0.500	0.530		mg/L		106	80 - 120
Molybdenum	0.500	0.506		mg/L		101	80 - 120
Lead	0.500	0.520		mg/L		104	80 - 120
Antimony	0.250	0.261		mg/L		105	80 - 120
Selenium	1.00	1.00		mg/L		100	80 - 120
Thallium	1.00	1.07		mg/L		107	80 - 120
Lithium	0.500	0.460		mg/L		92	80 - 120

Lab Sample ID: MB 180-289414/1-A
Matrix: Water
Analysis Batch: 290747

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 289414

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0010	0.00032	mg/L		08/27/19 10:34	09/07/19 14:34	1
Barium	<0.0016		0.010	0.0016	mg/L		08/27/19 10:34	09/07/19 14:34	1
Beryllium	<0.00018		0.0010	0.00018	mg/L		08/27/19 10:34	09/07/19 14:34	1
Cadmium	<0.00013		0.0010	0.00013	mg/L		08/27/19 10:34	09/07/19 14:34	1
Cobalt	<0.000075		0.00050	0.000075	mg/L		08/27/19 10:34	09/07/19 14:34	1
Chromium	<0.0015		0.0020	0.0015	mg/L		08/27/19 10:34	09/07/19 14:34	1
Molybdenum	<0.00061		0.0050	0.00061	mg/L		08/27/19 10:34	09/07/19 14:34	1
Lead	<0.00013		0.0010	0.00013	mg/L		08/27/19 10:34	09/07/19 14:34	1
Antimony	<0.00038		0.0020	0.00038	mg/L		08/27/19 10:34	09/07/19 14:34	1
Selenium	<0.0015		0.0050	0.0015	mg/L		08/27/19 10:34	09/07/19 14:34	1
Thallium	<0.00015		0.0010	0.00015	mg/L		08/27/19 10:34	09/07/19 14:34	1
Lithium	<0.0034		0.0050	0.0034	mg/L		08/27/19 10:34	09/07/19 14:34	1

Lab Sample ID: LCS 180-289414/2-A
Matrix: Water
Analysis Batch: 290747

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 289414

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	0.983		mg/L		98	80 - 120
Barium	1.00	1.06		mg/L		106	80 - 120
Beryllium	0.500	0.507		mg/L		101	80 - 120
Cadmium	0.500	0.533		mg/L		107	80 - 120
Cobalt	0.500	0.499		mg/L		100	80 - 120
Chromium	0.500	0.531		mg/L		106	80 - 120
Molybdenum	0.500	0.516		mg/L		103	80 - 120
Lead	0.500	0.512		mg/L		102	80 - 120
Antimony	0.250	0.261		mg/L		104	80 - 120
Selenium	1.00	1.06		mg/L		106	80 - 120
Thallium	1.00	1.02		mg/L		102	80 - 120
Lithium	0.500	0.493		mg/L		99	80 - 120

Method: EPA 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: 180-94596-C-6-B MS
Matrix: Water
Analysis Batch: 290747

Client Sample ID: 180-94596-C-6-B MS
Prep Type: Total Recoverable
Prep Batch: 289414

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	<0.00032		1.00	0.975		mg/L		97	75 - 125
Barium	0.085		1.00	1.11		mg/L		103	75 - 125
Beryllium	<0.00018		0.500	0.508		mg/L		102	75 - 125
Cadmium	<0.00013		0.500	0.522		mg/L		104	75 - 125
Cobalt	<0.000075		0.500	0.493		mg/L		99	75 - 125
Chromium	0.0071		0.500	0.524		mg/L		103	75 - 125
Molybdenum	<0.00061		0.500	0.500		mg/L		100	75 - 125
Lead	<0.00013		0.500	0.507		mg/L		101	75 - 125
Antimony	<0.00038		0.250	0.257		mg/L		103	75 - 125
Selenium	0.0015	J	1.00	1.01		mg/L		101	75 - 125
Thallium	<0.00015		1.00	1.01		mg/L		101	75 - 125
Lithium	<0.0034		0.500	0.503		mg/L		101	75 - 125

Lab Sample ID: 180-94596-C-6-C MSD
Matrix: Water
Analysis Batch: 290747

Client Sample ID: 180-94596-C-6-C MSD
Prep Type: Total Recoverable
Prep Batch: 289414

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	<0.00032		1.00	0.936		mg/L		94	75 - 125	4	20
Barium	0.085		1.00	1.08		mg/L		99	75 - 125	3	20
Beryllium	<0.00018		0.500	0.477		mg/L		95	75 - 125	6	20
Cadmium	<0.00013		0.500	0.502		mg/L		100	75 - 125	4	20
Cobalt	<0.000075		0.500	0.486		mg/L		97	75 - 125	2	20
Chromium	0.0071		0.500	0.507		mg/L		100	75 - 125	3	20
Molybdenum	<0.00061		0.500	0.489		mg/L		98	75 - 125	2	20
Lead	<0.00013		0.500	0.489		mg/L		98	75 - 125	4	20
Antimony	<0.00038		0.250	0.246		mg/L		98	75 - 125	4	20
Selenium	0.0015	J	1.00	0.995		mg/L		99	75 - 125	1	20
Thallium	<0.00015		1.00	0.970		mg/L		97	75 - 125	4	20
Lithium	<0.0034		0.500	0.473		mg/L		95	75 - 125	6	20

Method: EPA 7470A - Mercury (CVAA)

Lab Sample ID: MB 180-289568/1-A
Matrix: Water
Analysis Batch: 289762

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 289568

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		08/28/19 11:36	08/29/19 16:55	1

Lab Sample ID: LCS 180-289568/2-A
Matrix: Water
Analysis Batch: 289762

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 289568

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00250	0.00249		mg/L		100	80 - 120

Method: EPA 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: 180-94596-5 MS
Matrix: Water
Analysis Batch: 289762

Client Sample ID: FB-2-20-19
Prep Type: Total/NA
Prep Batch: 289568

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	<0.00010		0.00100	0.00102		mg/L		102	75 - 125		

Lab Sample ID: 180-94596-5 MSD
Matrix: Water
Analysis Batch: 289762

Client Sample ID: FB-2-20-19
Prep Type: Total/NA
Prep Batch: 289568

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	<0.00010		0.00100	0.00102		mg/L		102	75 - 125	0	20

QC Association Summary

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-94596-1
SDG: 1

HPLC/IC

Analysis Batch: 290138

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-94596-1	ARGWA-19	Total/NA	Water	300.0	
180-94596-2	ARGWA-20	Total/NA	Water	300.0	
180-94596-3	ARGWC-21	Total/NA	Water	300.0	
180-94596-4	EB-2-20-19	Total/NA	Water	300.0	
180-94596-5	FB-2-20-19	Total/NA	Water	300.0	
180-94596-6	DUP-2	Total/NA	Water	300.0	
MB 180-290138/32	Method Blank	Total/NA	Water	300.0	
LCS 180-290138/31	Lab Control Sample	Total/NA	Water	300.0	
180-94596-1 MS	ARGWA-19	Total/NA	Water	300.0	
180-94596-1 MSD	ARGWA-19	Total/NA	Water	300.0	

Metals

Prep Batch: 289413

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-94596-1	ARGWA-19	Total Recoverable	Water	3005A	
180-94596-2	ARGWA-20	Total Recoverable	Water	3005A	
180-94596-3	ARGWC-21	Total Recoverable	Water	3005A	
180-94596-4	EB-2-20-19	Total Recoverable	Water	3005A	
MB 180-289413/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-289413/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 289414

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-94596-5	FB-2-20-19	Total Recoverable	Water	3005A	
180-94596-6	DUP-2	Total Recoverable	Water	3005A	
MB 180-289414/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-289414/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
180-94596-C-6-B MS	180-94596-C-6-B MS	Total Recoverable	Water	3005A	
180-94596-C-6-C MSD	180-94596-C-6-C MSD	Total Recoverable	Water	3005A	

Prep Batch: 289568

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-94596-1	ARGWA-19	Total/NA	Water	7470A	
180-94596-2	ARGWA-20	Total/NA	Water	7470A	
180-94596-3	ARGWC-21	Total/NA	Water	7470A	
180-94596-4	EB-2-20-19	Total/NA	Water	7470A	
180-94596-5	FB-2-20-19	Total/NA	Water	7470A	
180-94596-6	DUP-2	Total/NA	Water	7470A	
MB 180-289568/1-A	Method Blank	Total/NA	Water	7470A	
LCS 180-289568/2-A	Lab Control Sample	Total/NA	Water	7470A	
180-94596-5 MS	FB-2-20-19	Total/NA	Water	7470A	
180-94596-5 MSD	FB-2-20-19	Total/NA	Water	7470A	

Analysis Batch: 289762

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-94596-1	ARGWA-19	Total/NA	Water	EPA 7470A	289568
180-94596-2	ARGWA-20	Total/NA	Water	EPA 7470A	289568
180-94596-3	ARGWC-21	Total/NA	Water	EPA 7470A	289568
180-94596-4	EB-2-20-19	Total/NA	Water	EPA 7470A	289568
180-94596-5	FB-2-20-19	Total/NA	Water	EPA 7470A	289568

Metals (Continued)

Analysis Batch: 289762 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-94596-6	DUP-2	Total/NA	Water	EPA 7470A	289568
MB 180-289568/1-A	Method Blank	Total/NA	Water	EPA 7470A	289568
LCS 180-289568/2-A	Lab Control Sample	Total/NA	Water	EPA 7470A	289568
180-94596-5 MS	FB-2-20-19	Total/NA	Water	EPA 7470A	289568
180-94596-5 MSD	FB-2-20-19	Total/NA	Water	EPA 7470A	289568

Analysis Batch: 290747

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-94596-5	FB-2-20-19	Total Recoverable	Water	EPA 6020	289414
180-94596-6	DUP-2	Total Recoverable	Water	EPA 6020	289414
MB 180-289414/1-A	Method Blank	Total Recoverable	Water	EPA 6020	289414
LCS 180-289414/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020	289414
180-94596-C-6-B MS	180-94596-C-6-B MS	Total Recoverable	Water	EPA 6020	289414
180-94596-C-6-C MSD	180-94596-C-6-C MSD	Total Recoverable	Water	EPA 6020	289414

Analysis Batch: 290864

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-94596-1	ARGWA-19	Total Recoverable	Water	EPA 6020	289413
180-94596-2	ARGWA-20	Total Recoverable	Water	EPA 6020	289413
180-94596-3	ARGWC-21	Total Recoverable	Water	EPA 6020	289413
180-94596-4	EB-2-20-19	Total Recoverable	Water	EPA 6020	289413
MB 180-289413/1-A	Method Blank	Total Recoverable	Water	EPA 6020	289413
LCS 180-289413/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020	289413

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Taylor Goble	Lab PM: Veronica Bortot	Carrier Tracking No(s):	COC No: 400-73521-29028.1
Client Contact: Joju Abraham	Phone: 770-594-5998	E-Mail: Veronica.Bortot@testamericainc.com		Page: Page
Company: Southern Company				Job #:
Address: PO BOX 2641 GSC8	Due Date Requested:			
City: Birmingham	TAT Requested (days):			
State, Zip: AL, 35291				
Phone:	PO #: SCS10347656			
Email: JAbraham@southernco.com	WO #:			
Project Name: CCR Plant Arkwright - Ash Pond 2	Project #: 40007712			
Site: Georgia	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Metals App. IV (EPA 6020/7470)	Flouride	Radium 226 & 228 (SW-846 9315/9320)		Total Number of containers	Special I
			Preservation Code:				D	D	N	D		
ARGWA-19	8-20-19	1326	G	Water	N	N	✓	✓	✓		3	
ARGWA-20	8-20-19	0954	G	Water	N	N	✓	✓	✓		3	
ARGWC-21	8-20-19	1512	G	Water	N	N	✓	✓	✓		3	
EB-2-20-19	8-20-19	1525	G	Water	N	N	✓	✓	✓		3	
FB-2-20-19	8-20-19	1345	G	Water	N	N	✓	✓	✓		3	
Dup-2	8-20-19	—	G	Water	N	N	✓	✓	✓		3	
				Water								
				Water								
				Water								
				Water								
				Water								

180-94596 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

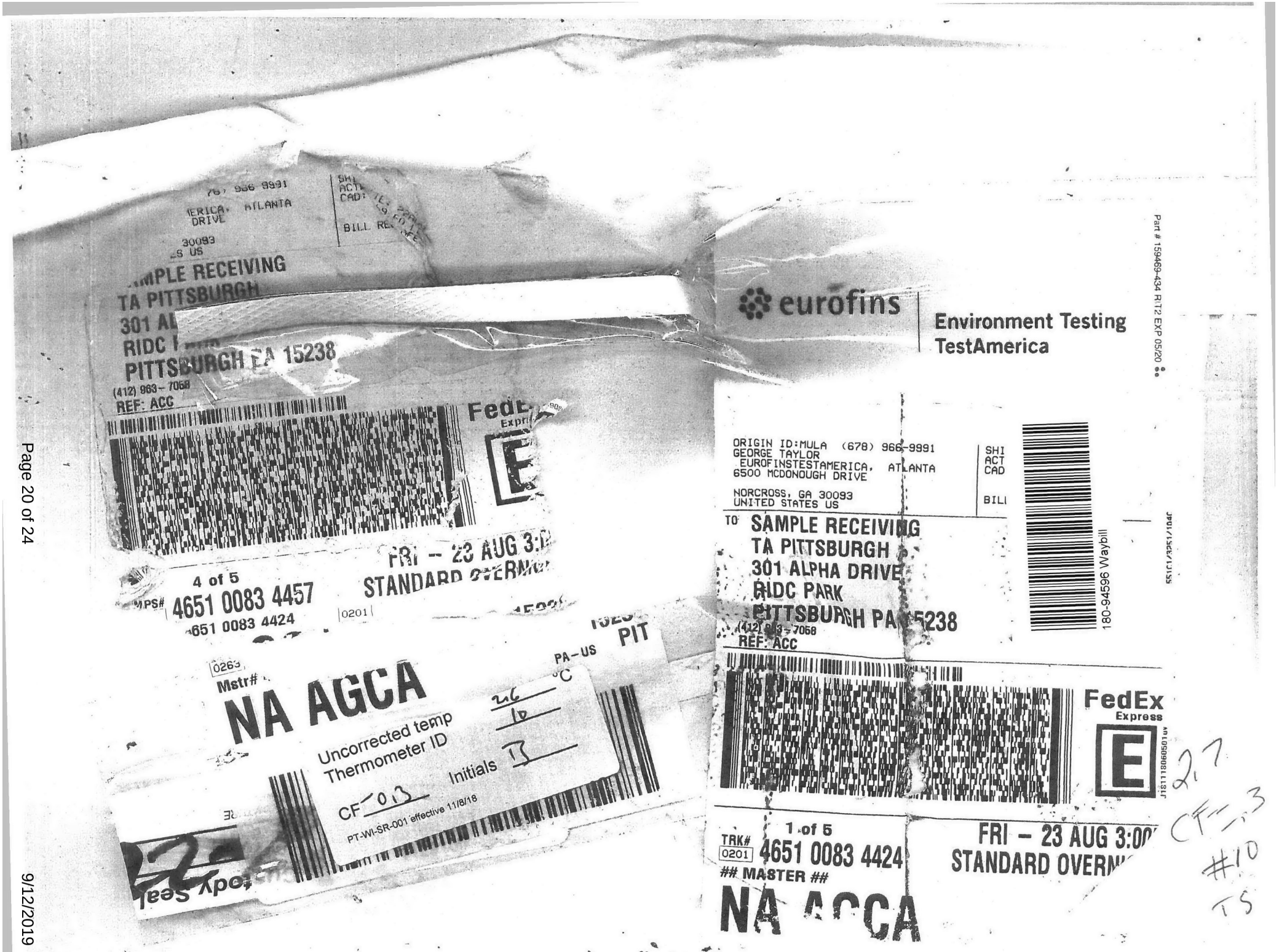
Special Instructions/QC Requirements:

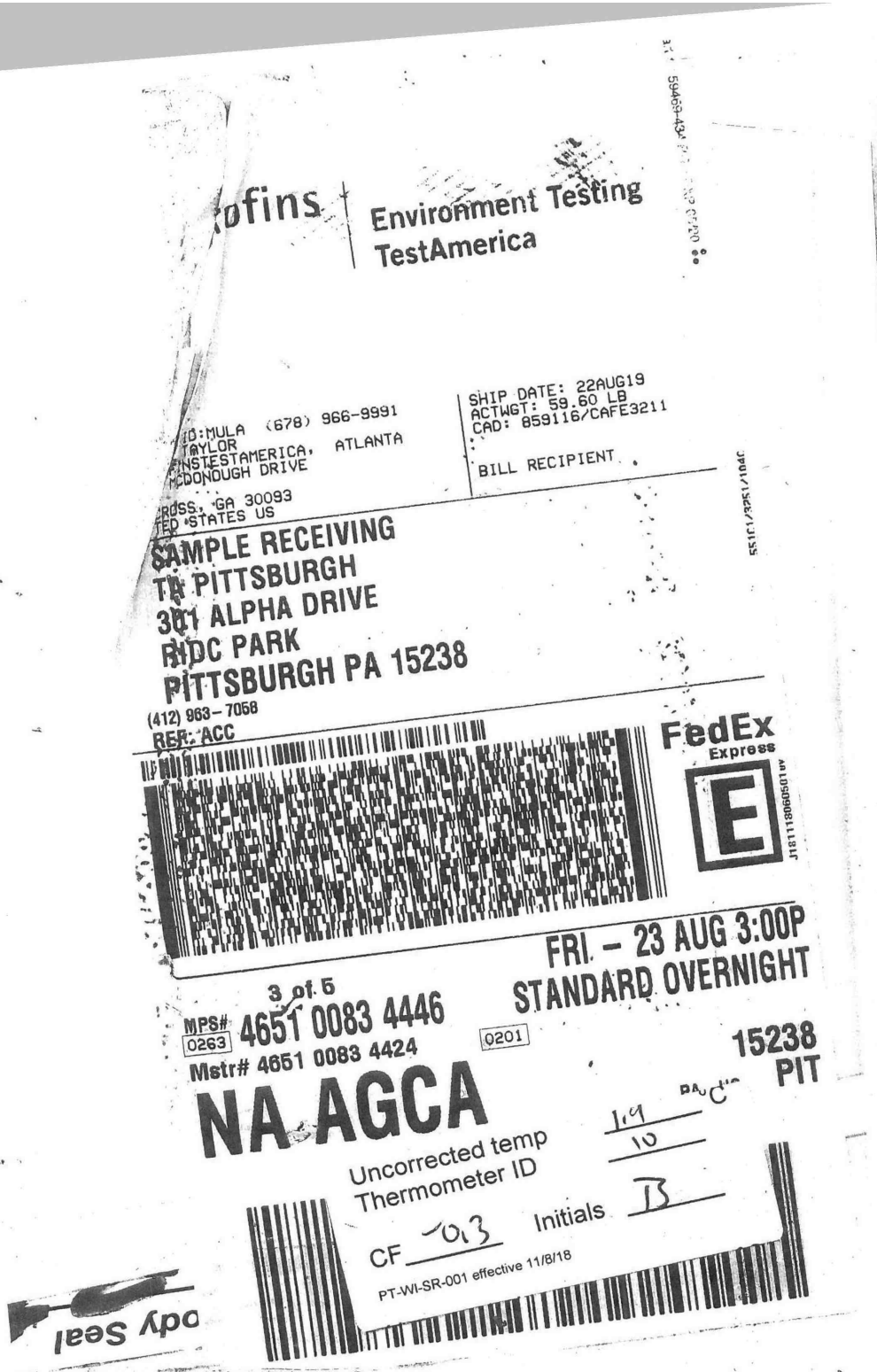
Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Taylor Goble	8-22-19/1520	ACC	[signature] 8/22/19	15:27	ETA
2	[signature] 8/22/19	15:30	ETA	[signature]	8-23-19	TAL HT
3					840	

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 08/04/2016


eurofins
Environment Testing
TestAmerica
Part # 159469-434 R1T2 EXP 05/20
ORIGIN ID:MULA (678) 966-9991
GEORGE TAYLOR
EUROFINSTESTAMERICA, ATLANTA
6500 MCDONOUGH DRIVE
NORCROSS, GA 30093
UNITED STATES US
SHI
ACT
CAD
BILL
TO SAMPLE RECEIVING
TA PITTSBURGH
301 ALPHA DRIVE
RIDC PARK
PITTSBURGH PA 15238
(412) 963-7058
REF: ACC
180-94596 Waybill
FedEx
Express
TRK# 0201 4651 0083 4424
MASTER
NA AGCA
1 of 5
FRI - 23 AUG 3:00
STANDARD OVERN
4 of 5
4651 0083 4457
4651 0083 4424
0201
FRI - 23 AUG 3:
STANDARD OVERN
PIT
PA-US
Mstr#
NA AGCA
Uncorrected temp °C
Thermometer ID
CF 0.3
Initials
PT-WI-SR-001 effective 11/6/18
2.7
CF -.3
#10
TS



...ofins | Environment Testing
TestAmerica

...ID:MULA (678) 966-9991
...TAYLOR
...EUROFINSTESTAMERICA, ATLANTA
...6500 MCDONOUGH DRIVE
...NORCROSS, GA 30093
...UNITED STATES US

SHIP DATE: 22AUG19
ACTWGT: 59.60 LB
CAD: 859116/CAFE3211

BILL RECIPIENT

TO SAMPLE RECEIVING
TA PITTSBURGH
301 ALPHA DRIVE
RIDC PARK
PITTSBURGH PA 15238
(412) 963-7058
REF: ACC

FedEx Express

FRI - 23 AUG 3:00P
STANDARD OVERNIGHT

3 of 5
MPS# 0263 4651 0083 4446
Mstr# 4651 0083 4424
0201

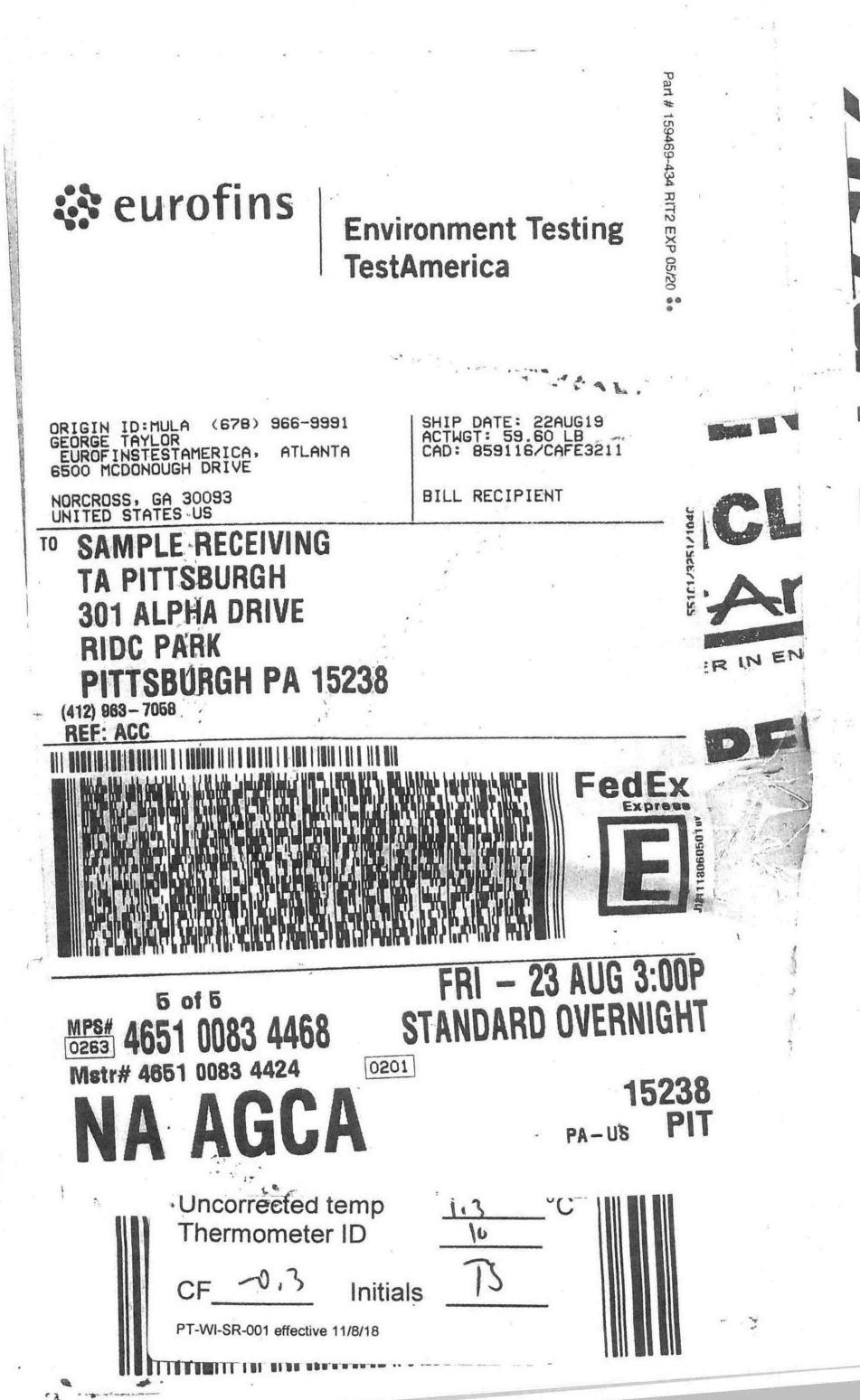
15238
PIT

NA AGCA

Uncorrected temp 1.9 °C
Thermometer ID 10
CF -0.3 Initials TS

PT-WI-SR-001 effective 11/8/18

...dy Seal



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TestAmerica

Part # 159469-434 RIT2 EXP 05/20

ORIGIN ID:MULA (678) 966-9991
GEORGE TAYLOR
EUROFINSTESTAMERICA, ATLANTA
6500 MCDONOUGH DRIVE
NORCROSS, GA 30093
UNITED STATES US

SHIP DATE: 22AUG19
ACTWGT: 59.60 LB
CAD: 859116/CAFE3211

BILL RECIPIENT

TO SAMPLE RECEIVING
TA PITTSBURGH
301 ALPHA DRIVE
RIDC PARK
PITTSBURGH PA 15238
(412) 963-7058
REF: ACC

FedEx Express

FRI - 23 AUG 3:00P
STANDARD OVERNIGHT

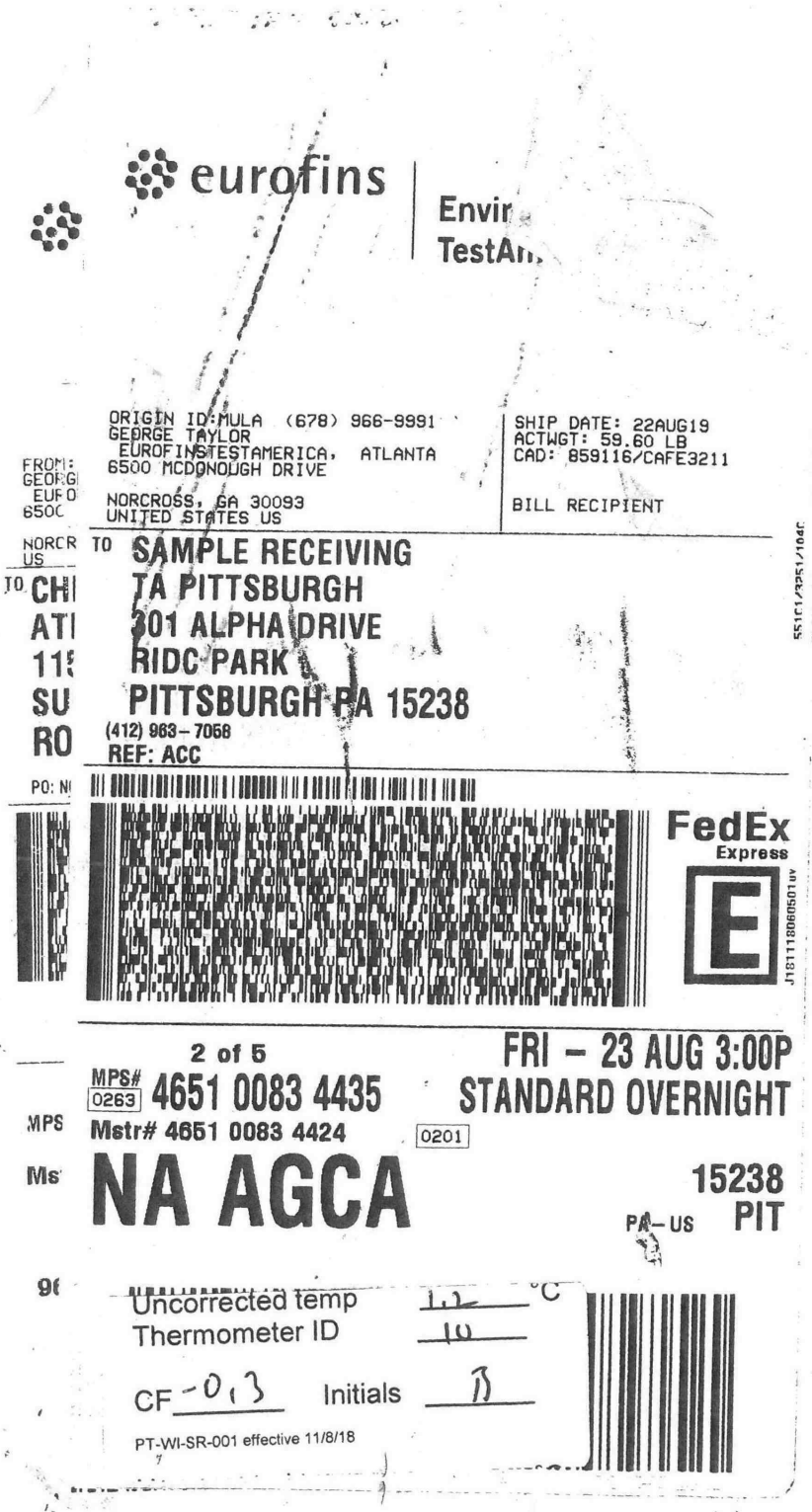
5 of 5
MPS# 0263 4651 0083 4468
Mstr# 4651 0083 4424
0201

15238
PA-US PIT

NA AGCA

Uncorrected temp 1.3 °C
Thermometer ID 10
CF -0.3 Initials TS

PT-WI-SR-001 effective 11/8/18



eurofins | Envir... TestAm...

ORIGIN ID:MULA (678) 966-9991
GEORGE TAYLOR
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6500 MCDONOUGH DRIVE

NORCROSS, GA 30093
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SHIP DATE: 22AUG19
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BILL RECIPIENT

FROM: GEORG... EUF... 650...

NORCR... US

TO CHI... ATI... 11... SU... RO...

TO SAMPLE RECEIVING
TA PITTSBURGH
301 ALPHA DRIVE
RIDC PARK
PITTSBURGH PA 15238
(412) 963-7068
REF: ACC

PO: N...

FedEx Express

2 of 5
MPS# 0263 4651 0083 4435
Mstr# 4651 0083 4424

FRI - 23 AUG 3:00P
STANDARD OVERNIGHT

0201

NA AGCA

15238
PA-US PIT

Uncorrected temp 1.2 °C
Thermometer ID 10
CF -0.3 Initials JJ

PT-WI-SR-001 effective 11/8/18

Eurofins TestAmerica, Pittsburgh
301 Alpha Drive RIDC Park
Pittsburgh, PA 15238
Phone: 412-963-7058 Fax: 412-963-2468

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bortot, Veronica	Carrier Tracking No(s):	COC No: 180-371861.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: veronica.bortot@testamericainc.com	State of Origin: Georgia	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 180-94596-1
Address: 13715 Rider Trail North,	Due Date Requested: 9/5/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045	PO #:			
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	WO #:			
Email:	Project #: 18020201			
Project Name: CCR - Plant Arkwright Ash Pond 2	SSOW#:			
Site: Georgia Power Site Sampling Data (GW)				

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Standard Target List	9320_Ra228/PrecSep_0 Standard Target List	Ra226Ra228_GFPC	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
ARGWA-19 (180-94596-1)	8/20/19	13:26 Eastern		Water			X	X	X	1	
ARGWA-20 (180-94596-2)	8/20/19	09:54 Eastern		Water			X	X	X	1	
ARGWC-21 (180-94596-3)	8/20/19	15:12 Eastern		Water			X	X	X	1	
EB-2-20-19 (180-94596-4)	8/20/19	15:25 Eastern		Water			X	X	X	1	
FB-2-20-19 (180-94596-5)	8/20/19	13:45 Eastern		Water			X	X	X	1	
DUP-2 (180-94596-6)	8/20/19	Eastern		Water			X	X	X	1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 8/26/19 1200	Company: ENV	Received by:	Date/Time: 8-27-19 09:30	Company: TA SLT	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company	

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

9/12/2019

Page 23 of 24

Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-94596-1
SDG Number: 1

Login Number: 94596
List Number: 1
Creator: Watson, Debbie

List Source: Eurofins TestAmerica, Pittsburgh

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

Eurofins TestAmerica, Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-94596-2
Laboratory Sample Delivery Group: 1
Client Project/Site: CCR - Plant Arkwright Ash Pond 2
Sampling Event: PLANTARKWRIGHT - AP-2

For:
Southern Company
241 Ralph McGill Blvd SE
B10185
Atlanta, Georgia 30308

Attn: Joju Abraham

Veronica Bortot

Authorized for release by:
9/30/2019 4:32:58 PM

Veronica Bortot, Senior Project Manager
(412)963-2435
veronica.bortot@testamericainc.com

PA Lab ID: 02-00416

Table of Contents

Case Narrative

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-94596-2
SDG: 1

Job ID: 180-94596-2

Laboratory: Eurofins TestAmerica, Pittsburgh

Narrative

Job Narrative
180-94596-2

Comments
No additional comments.

Receipt
The samples were received on 8/23/2019 8:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 0.9º C, 1.0º C, 1.1º C, 2.3º C and 2.4º C.

RAD
Method(s) 9315: Radium-226 prep batch 160-441087

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.
ARGWA-19 (180-94596-1), ARGWA-20 (180-94596-2), ARGWC-21 (180-94596-3), EB-2-20-19 (180-94596-4), FB-2-20-19 (180-94596-5), DUP-2 (180-94596-6), (LCS 160-441087/1-A), (MB 160-441087/23-A), (240-117851-H-13-A), (240-117851-A-13-A MS) and (240-117851-A-13-B MSD)

Method(s) 9320: Radium-228 Prep Batch 160-441106

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

ARGWA-19 (180-94596-1), ARGWA-20 (180-94596-2), ARGWC-21 (180-94596-3), EB-2-20-19 (180-94596-4), FB-2-20-19 (180-94596-5), DUP-2 (180-94596-6), (LCS 160-441106/1-A), (MB 160-441106/23-A), (240-117851-H-13-B), (240-117851-A-13-C MS) and (240-117851-A-13-D MSD)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-94596-2
SDG: 1

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Accreditation/Certification Summary

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-94596-2
SDG: 1

Laboratory: Eurofins TestAmerica, Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	19-033-0	06-27-20
Arkansas DEQ	State Program	88-0690	06-27-20
California	State	2891	04-30-20
California	State Program	2891	04-30-20
Connecticut	State	PH-0688	09-30-20
Connecticut	State Program	PH-0688	09-30-20
Florida	NELAP	E871008	06-30-20
Florida	NELAP	E871008	06-30-20
Illinois	NELAP	200005	06-30-20
Illinois	NELAP	004375	06-30-20
Kansas	NELAP	E-10350	01-31-20
Kansas	NELAP	E-10350	03-31-20
Kentucky (UST)	State	162013	04-30-20
Kentucky (UST)	State Program	162013	04-30-20
Kentucky (WW)	State	KY98043	12-31-19
Kentucky (WW)	State Program	KY98043	12-31-19
Louisiana	NELAP	04041	06-30-20
Louisiana	NELAP	04041	06-30-20
Minnesota	NELAP	042-999-482	12-31-19
Minnesota	NELAP	042-999-482	12-31-19
Nevada	State	PA00164	07-31-20
Nevada	State Program	PA00164	07-31-20
New Hampshire	NELAP	2030	04-04-20
New Jersey	NELAP	PA005	06-30-20
New Jersey	NELAP	PA005	06-30-20
New York	NELAP	11182	03-31-20
New York	NELAP	11182	04-01-20
North Carolina (WW/SW)	State Program	434	12-31-19
North Dakota	State	R-227	04-30-20
North Dakota	State Program	R-227	04-30-20
Oregon	NELAP	PA-2151	02-06-20
Oregon	NELAP	PA-2151	02-06-20
Pennsylvania	NELAP	02-00416	04-30-20
Pennsylvania	NELAP	02-00416	04-30-20
Rhode Island	State	LAO00362	12-30-19
Rhode Island	State Program	LAO00362	12-30-19
South Carolina	State Program	89014	04-30-20
Texas	NELAP	T104704528-15-2	03-31-20
Texas	NELAP	T104704528	03-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	Federal	P-Soil-01	06-26-22
USDA	US Federal Programs	P330-16-00211	06-26-22
Utah	NELAP	PA001462015-4	05-31-20
Utah	NELAP	PA001462019-8	05-31-20
Virginia	NELAP	460189	09-14-20
Virginia	NELAP	10043	09-15-20
West Virginia DEP	State	142	01-31-20
West Virginia DEP	State Program	142	01-31-20
Wisconsin	State	998027800	08-31-20
Wisconsin	State Program	998027800	08-31-20

Accreditation/Certification Summary

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-94596-2
SDG: 1

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	DoD	L2305	04-06-22
ANAB	DOE	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-19
Arizona	State Program	AZ0813	12-08-19 *
California	State	2886	06-30-20
California	State Program	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Connecticut	State Program	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
Florida	NELAP	E87689	06-30-20
Hawaii	State Program	NA	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Illinois	NELAP	200023	11-30-19
Illinois	NELAP	004553	11-30-19
Iowa	State Program	373	12-01-20
Kansas	NELAP	E-10236	10-31-19 *
Kentucky (DW)	State	KY90125	12-31-19
Kentucky (DW)	State Program	KY90125	12-31-19
Louisiana	NELAP	04080	06-30-20
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	NELAP	LA011	12-31-19
Louisiana (DW)	State	LA011	12-31-19
Maryland	State	310	09-30-20
Maryland	State Program	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Michigan	State Program	9005	06-30-20
Missouri	State	780	06-30-22
Missouri	State Program	780	06-30-20
Nevada	State	MO000542020-1	07-31-20
Nevada	State Program	MO000542018-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	03-31-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
North Dakota	State Program	R207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Oklahoma	State Program	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State	85002001	06-30-20
South Carolina	State Program	85002001	06-30-20
Texas	NELAP	T104704193-19-14	07-31-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	Federal	058448	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-94596-2
SDG: 1

Laboratory: Eurofins TestAmerica, St. Louis (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
USDA	Federal	P330-17-0028	02-02-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	460230	06-14-20
Virginia	NELAP	10310	06-14-20
Washington	State Program	C592	08-30-19 *
West Virginia DEP	State Program	381	10-31-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Sample Summary

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-94596-2
SDG: 1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
180-94596-1	ARGWA-19	Water	08/20/19 13:26	08/23/19 08:40	
180-94596-2	ARGWA-20	Water	08/20/19 09:54	08/23/19 08:40	
180-94596-3	ARGWC-21	Water	08/20/19 15:12	08/23/19 08:40	
180-94596-4	EB-2-20-19	Water	08/20/19 15:25	08/23/19 08:40	
180-94596-5	FB-2-20-19	Water	08/20/19 13:45	08/23/19 08:40	
180-94596-6	DUP-2	Water	08/20/19 00:00	08/23/19 08:40	

Method Summary

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-94596-2
SDG: 1

Method	Method Description	Protocol	Laboratory
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Lab Chronicle

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-94596-2
SDG: 1

Client Sample ID: ARGWA-19
Date Collected: 08/20/19 13:26
Date Received: 08/23/19 08:40

Lab Sample ID: 180-94596-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.13 mL	1.0 g	441087	08/28/19 13:14	ORM	TAL SL
Total/NA	Analysis	9315		1			443365	09/19/19 16:59	KLS	TAL SL
	Instrument ID: GFPCBLUE									
Total/NA	Prep	PrecSep_0			1000.13 mL	1.0 g	441106	08/28/19 14:30	ORM	TAL SL
Total/NA	Analysis	9320		1			442968	09/16/19 09:41	KLS	TAL SL
	Instrument ID: GFPCORANGE									
Total/NA	Analysis	Ra226_Ra228		1			444224	09/26/19 08:20	SMP	TAL SL
	Instrument ID: NOEQUIP									

Client Sample ID: ARGWA-20
Date Collected: 08/20/19 09:54
Date Received: 08/23/19 08:40

Lab Sample ID: 180-94596-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.41 mL	1.0 g	441087	08/28/19 13:14	ORM	TAL SL
Total/NA	Analysis	9315		1			443365	09/19/19 16:59	KLS	TAL SL
	Instrument ID: GFPCBLUE									
Total/NA	Prep	PrecSep_0			1000.41 mL	1.0 g	441106	08/28/19 14:30	ORM	TAL SL
Total/NA	Analysis	9320		1			442968	09/16/19 09:41	KLS	TAL SL
	Instrument ID: GFPCORANGE									
Total/NA	Analysis	Ra226_Ra228		1			444224	09/26/19 08:20	SMP	TAL SL
	Instrument ID: NOEQUIP									

Client Sample ID: ARGWC-21
Date Collected: 08/20/19 15:12
Date Received: 08/23/19 08:40

Lab Sample ID: 180-94596-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.76 mL	1.0 g	441087	08/28/19 13:14	ORM	TAL SL
Total/NA	Analysis	9315		1			443365	09/19/19 16:59	KLS	TAL SL
	Instrument ID: GFPCBLUE									
Total/NA	Prep	PrecSep_0			1000.76 mL	1.0 g	441106	08/28/19 14:30	ORM	TAL SL
Total/NA	Analysis	9320		1			442968	09/16/19 09:41	KLS	TAL SL
	Instrument ID: GFPCORANGE									
Total/NA	Analysis	Ra226_Ra228		1			444224	09/26/19 08:20	SMP	TAL SL
	Instrument ID: NOEQUIP									

Client Sample ID: EB-2-20-19
Date Collected: 08/20/19 15:25
Date Received: 08/23/19 08:40

Lab Sample ID: 180-94596-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.79 mL	1.0 g	441087	08/28/19 13:14	ORM	TAL SL
Total/NA	Analysis	9315		1			443365	09/19/19 16:59	KLS	TAL SL
	Instrument ID: GFPCBLUE									

Lab Chronicle

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-94596-2
SDG: 1

Client Sample ID: EB-2-20-19
Date Collected: 08/20/19 15:25
Date Received: 08/23/19 08:40

Lab Sample ID: 180-94596-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep_0			1000.79 mL	1.0 g	441106	08/28/19 14:30	ORM	TAL SL
Total/NA	Analysis	9320		1			442968	09/16/19 09:41	KLS	TAL SL
	Instrument ID: GFPCORANGE									
Total/NA	Analysis	Ra226_Ra228		1			444224	09/26/19 08:20	SMP	TAL SL
	Instrument ID: NOEQUIP									

Client Sample ID: FB-2-20-19
Date Collected: 08/20/19 13:45
Date Received: 08/23/19 08:40

Lab Sample ID: 180-94596-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.44 mL	1.0 g	441087	08/28/19 13:14	ORM	TAL SL
Total/NA	Analysis	9315		1			443365	09/19/19 16:59	KLS	TAL SL
	Instrument ID: GFPCBLUE									
Total/NA	Prep	PrecSep_0			1000.44 mL	1.0 g	441106	08/28/19 14:30	ORM	TAL SL
Total/NA	Analysis	9320		1			442968	09/16/19 09:41	KLS	TAL SL
	Instrument ID: GFPCORANGE									
Total/NA	Analysis	Ra226_Ra228		1			444224	09/26/19 08:20	SMP	TAL SL
	Instrument ID: NOEQUIP									

Client Sample ID: DUP-2
Date Collected: 08/20/19 00:00
Date Received: 08/23/19 08:40

Lab Sample ID: 180-94596-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.21 mL	1.0 g	441087	08/28/19 13:14	ORM	TAL SL
Total/NA	Analysis	9315		1			443365	09/19/19 16:59	KLS	TAL SL
	Instrument ID: GFPCBLUE									
Total/NA	Prep	PrecSep_0			1000.21 mL	1.0 g	441106	08/28/19 14:30	ORM	TAL SL
Total/NA	Analysis	9320		1			442968	09/16/19 09:42	KLS	TAL SL
	Instrument ID: GFPCORANGE									
Total/NA	Analysis	Ra226_Ra228		1			444224	09/26/19 08:20	SMP	TAL SL
	Instrument ID: NOEQUIP									

Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Analyst References:

Lab: TAL SL

Batch Type: Prep

ORM = Octavia Moore

Batch Type: Analysis

KLS = Kody Saulters

SMP = Siobhan Perry

Client Sample ID: ARGWA-19

Date Collected: 08/20/19 13:26
Date Received: 08/23/19 08:40

Lab Sample ID: 180-94596-1

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0646	U	0.0963	0.0965	1.00	0.165	pCi/L	08/28/19 13:14	09/19/19 16:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.6*		*40 - 110*	*08/28/19 13:14*	*09/19/19 16:59*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.433**		0.244	0.247	1.00	0.367	pCi/L	08/28/19 14:30	09/16/19 09:41	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.6*		*40 - 110*	*08/28/19 14:30*	*09/16/19 09:41*	*1*
Y Carrier	*91.2*		*40 - 110*	*08/28/19 14:30*	*09/16/19 09:41*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.498**		0.262	0.265	5.00	0.367	pCi/L		09/26/19 08:20	1

Client Sample ID: ARGWA-20

Date Collected: 08/20/19 09:54
Date Received: 08/23/19 08:40

Lab Sample ID: 180-94596-2

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.216**		0.120	0.121	1.00	0.150	pCi/L	08/28/19 13:14	09/19/19 16:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*90.7*		*40 - 110*	*08/28/19 13:14*	*09/19/19 16:59*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.314	U	0.254	0.256	1.00	0.403	pCi/L	08/28/19 14:30	09/16/19 09:41	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*90.7*		*40 - 110*	*08/28/19 14:30*	*09/16/19 09:41*	*1*
Y Carrier	*83.7*		*40 - 110*	*08/28/19 14:30*	*09/16/19 09:41*	*1*

Client Sample ID: ARGWA-20

Lab Sample ID: 180-94596-2
Date Collected: 08/20/19 09:54
Matrix: Water
Date Received: 08/23/19 08:40

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.530		0.281	0.283	5.00	0.403	pCi/L		09/26/19 08:20	1

Client Sample ID: ARGWC-21

Lab Sample ID: 180-94596-3
Date Collected: 08/20/19 15:12
Matrix: Water
Date Received: 08/23/19 08:40

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0213	U	0.0865	0.0865	1.00	0.187	pCi/L	08/28/19 13:14	09/19/19 16:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.6*		*40 - 110*	*08/28/19 13:14*	*09/19/19 16:59*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.999		0.364	0.376	1.00	0.513	pCi/L	08/28/19 14:30	09/16/19 09:41	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.6*		*40 - 110*	*08/28/19 14:30*	*09/16/19 09:41*	*1*
Y Carrier	*81.1*		*40 - 110*	*08/28/19 14:30*	*09/16/19 09:41*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.978		0.374	0.386	5.00	0.513	pCi/L		09/26/19 08:20	1

Client Sample ID: EB-2-20-19

Lab Sample ID: 180-94596-4
Date Collected: 08/20/19 15:25
Matrix: Water
Date Received: 08/23/19 08:40

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.00595	U	0.0857	0.0857	1.00	0.168	pCi/L	08/28/19 13:14	09/19/19 16:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.9*		*40 - 110*	*08/28/19 13:14*	*09/19/19 16:59*	*1*

Client Sample ID: EB-2-20-19

Lab Sample ID: 180-94596-4

Date Collected: 08/20/19 15:25
Matrix: Water
Date Received: 08/23/19 08:40

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.484		0.272	0.275	1.00	0.411	pCi/L	08/28/19 14:30	09/16/19 09:41	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.9*		*40 - 110*	*08/28/19 14:30*	*09/16/19 09:41*	*1*
Y Carrier	*86.0*		*40 - 110*	*08/28/19 14:30*	*09/16/19 09:41*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.489		0.285	0.288	5.00	0.411	pCi/L		09/26/19 08:20	1

Client Sample ID: FB-2-20-19

Lab Sample ID: 180-94596-5

Date Collected: 08/20/19 13:45
Matrix: Water
Date Received: 08/23/19 08:40

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0960	U	0.0972	0.0976	1.00	0.152	pCi/L	08/28/19 13:14	09/19/19 16:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.8*		*40 - 110*	*08/28/19 13:14*	*09/19/19 16:59*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.361	U	0.268	0.270	1.00	0.422	pCi/L	08/28/19 14:30	09/16/19 09:41	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.8*		*40 - 110*	*08/28/19 14:30*	*09/16/19 09:41*	*1*
Y Carrier	*87.9*		*40 - 110*	*08/28/19 14:30*	*09/16/19 09:41*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.457		0.285	0.287	5.00	0.422	pCi/L		09/26/19 08:20	1

Client Sample ID: DUP-2

Date Collected: 08/20/19 00:00
Date Received: 08/23/19 08:40

Lab Sample ID: 180-94596-6

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0227	U	0.0813	0.0814	1.00	0.156	pCi/L	08/28/19 13:14	09/19/19 16:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.9*		*40 - 110*	*08/28/19 13:14*	*09/19/19 16:59*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.620**		0.300	0.306	1.00	0.448	pCi/L	08/28/19 14:30	09/16/19 09:42	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.9*		*40 - 110*	*08/28/19 14:30*	*09/16/19 09:42*	*1*
Y Carrier	*86.7*		*40 - 110*	*08/28/19 14:30*	*09/16/19 09:42*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.642**		0.311	0.317	5.00	0.448	pCi/L		09/26/19 08:20	1

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-441087/23-A
Matrix: Water
Analysis Batch: 443554

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 441087

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.08947	U	0.0759	0.0763	1.00	0.187	pCi/L	08/28/19 13:14	09/20/19 05:53	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.6*		*40 - 110*	*08/28/19 13:14*	*09/20/19 05:53*	*1*

Lab Sample ID: LCS 160-441087/1-A
Matrix: Water
Analysis Batch: 443365

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 441087

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	9.758		1.10	1.00	0.170	pCi/L	86	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*89.3*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-441106/23-A
Matrix: Water
Analysis Batch: 442963

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 441106

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1465	U	0.226	0.227	1.00	0.381	pCi/L	08/28/19 14:30	09/16/19 09:45	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.6*		*40 - 110*	*08/28/19 14:30*	*09/16/19 09:45*	*1*
Y Carrier	*85.6*		*40 - 110*	*08/28/19 14:30*	*09/16/19 09:45*	*1*

Lab Sample ID: LCS 160-441106/1-A
Matrix: Water
Analysis Batch: 442968

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 441106

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.58	9.327		1.11	1.00	0.464	pCi/L	97	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*89.3*		*40 - 110*
Y Carrier	*83.4*		*40 - 110*

QC Association Summary

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-94596-2
SDG: 1

Rad

Prep Batch: 441087

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-94596-1	ARGWA-19	Total/NA	Water	PrecSep-21	
180-94596-2	ARGWA-20	Total/NA	Water	PrecSep-21	
180-94596-3	ARGWC-21	Total/NA	Water	PrecSep-21	
180-94596-4	EB-2-20-19	Total/NA	Water	PrecSep-21	
180-94596-5	FB-2-20-19	Total/NA	Water	PrecSep-21	
180-94596-6	DUP-2	Total/NA	Water	PrecSep-21	
MB 160-441087/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-441087/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 441106

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-94596-1	ARGWA-19	Total/NA	Water	PrecSep_0	
180-94596-2	ARGWA-20	Total/NA	Water	PrecSep_0	
180-94596-3	ARGWC-21	Total/NA	Water	PrecSep_0	
180-94596-4	EB-2-20-19	Total/NA	Water	PrecSep_0	
180-94596-5	FB-2-20-19	Total/NA	Water	PrecSep_0	
180-94596-6	DUP-2	Total/NA	Water	PrecSep_0	
MB 160-441106/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-441106/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Taylor Goble	Lab PM: Veronica Bortot	Carrier Tracking No(s):	COC No: 400-73521-29028.1
Client Contact: Joju Abraham	Phone: 770-594-5998	E-Mail: Veronica.Bortot@testamericainc.com		Page: Page
Company: Southern Company				Job #:
Address: PO BOX 2641 GSC8	Due Date Requested:			
City: Birmingham	TAT Requested (days):			
State, Zip: AL, 35291				
Phone:	PO #: SCS10347656			
Email: JAbraham@southernco.com	WO #:			
Project Name: CCR Plant Arkwright - Ash Pond 2	Project #: 40007712			
Site: Georgia	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Metals App. IV (EPA 6020/7470)	Flouride	Radium 226 & 228 (SW-846 9315/9320)		Total Number of containers	Special I
			Preservation Code:				D	D	N	D		
ARGWA-19	8-20-19	1326	G	Water	N	N	✓	✓	✓		3	
ARGWA-20	8-20-19	0954	G	Water	N	N	✓	✓	✓		3	
ARGWC-21	8-20-19	1512	G	Water	N	N	✓	✓	✓		3	
EB-2-20-19	8-20-19	1525	G	Water	N	N	✓	✓	✓		3	
FB-2-20-19	8-20-19	1345	G	Water	N	N	✓	✓	✓		3	
Dup-2	8-20-19	—	G	Water	N	N	✓	✓	✓		3	
				Water								
				Water								
				Water								
				Water								
				Water								

180-94596 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

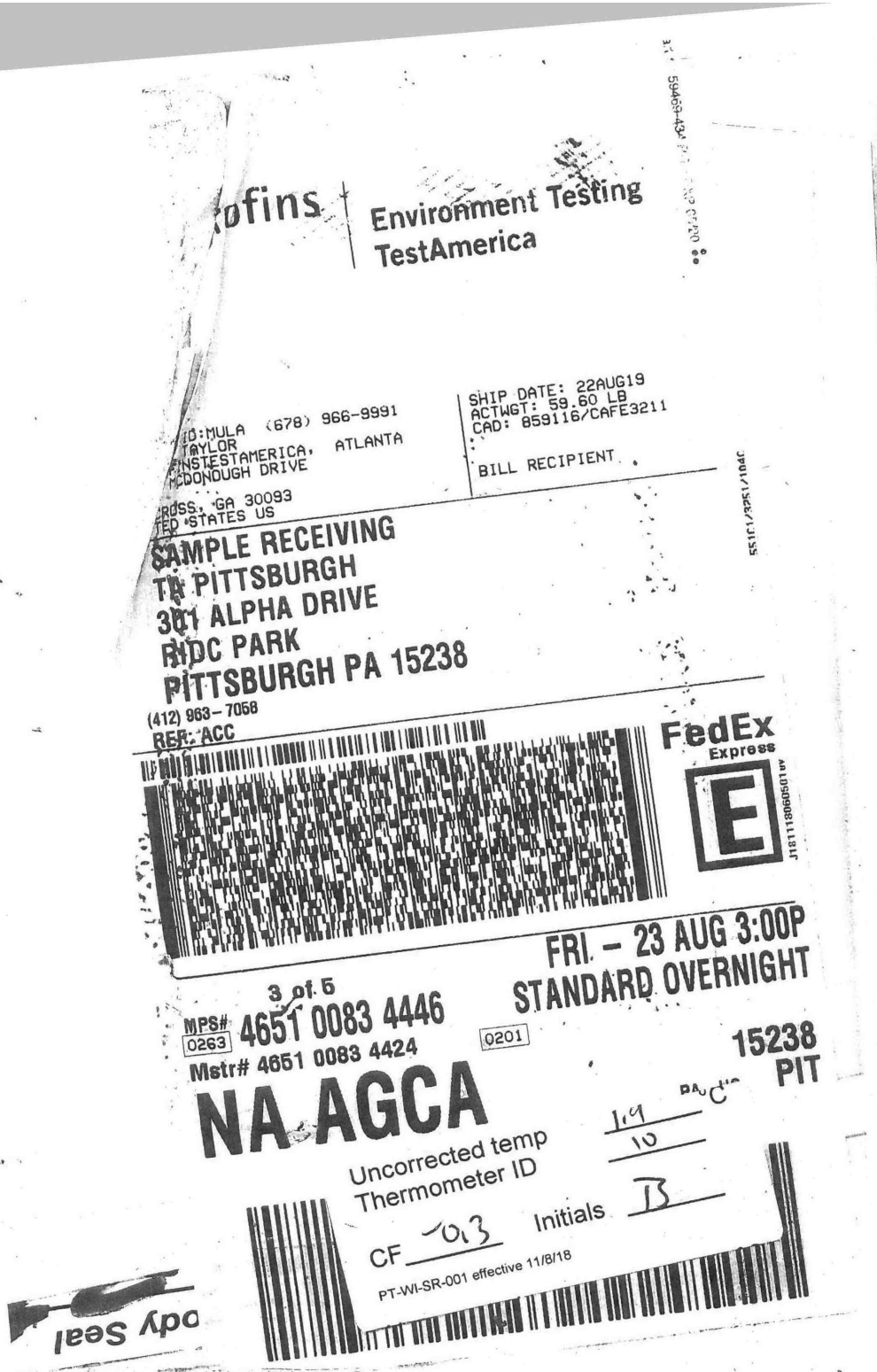
Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Taylor Goble	8-22-19/1520	ACC		8/22/19 15:27	ETA
2		8/22/19 15:30	ETA		8-23-19 8 40	TAL NT
3		Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 08/04/2016


eurofins
Environment Testing
TestAmerica
Part # 159469-434 RIT2 EXP 05/20
ORIGIN ID:MULA (678) 966-9991
GEORGE TAYLOR
EUROFINSTESTAMERICA, ATLANTA
6500 MCDONOUGH DRIVE
NORCROSS, GA 30093
UNITED STATES US
SHI
ACT
CAD
BILL
TO SAMPLE RECEIVING
TA PITTSBURGH
301 ALPHA DRIVE
RIDC PARK
PITTSBURGH PA 15238
(412) 963-7058
REF: ACC
180-94596 Waybill
FedEx
Express
TRK# 0201 4651 0083 4424
MASTER
NA AGCA
1 of 5
FRI - 23 AUG 3:00
STANDARD OVERN
4 of 5
4651 0083 4457
4651 0083 4424
0201
FRI - 23 AUG 3:
STANDARD OVERN
PA-US
PIT
Mstr#
NA AGCA
Uncorrected temp 26
Thermometer ID 16
Initials B
CF 0.3
PT-WI-SR-001 effective 11/6/18
2.7
CF -.3
#10
TS



ofins | Environment Testing
TestAmerica

ID:MULA (678) 966-9991
TAYLOR
EUROFINSTESTAMERICA, ATLANTA
MCDONOUGH DRIVE

NORCROSS, GA 30093
UNITED STATES US

SHIP DATE: 22AUG19
ACTWGT: 59.60 LB
CAD: 859116/CAFE3211

BILL RECIPIENT

SAMPLE RECEIVING
TA PITTSBURGH
301 ALPHA DRIVE
RIDC PARK
PITTSBURGH PA 15238
(412) 963-7058
REF: ACC

FedEx Express

3 of 5
MPS# 0263 4651 0083 4446
Mstr# 4651 0083 4424
0201

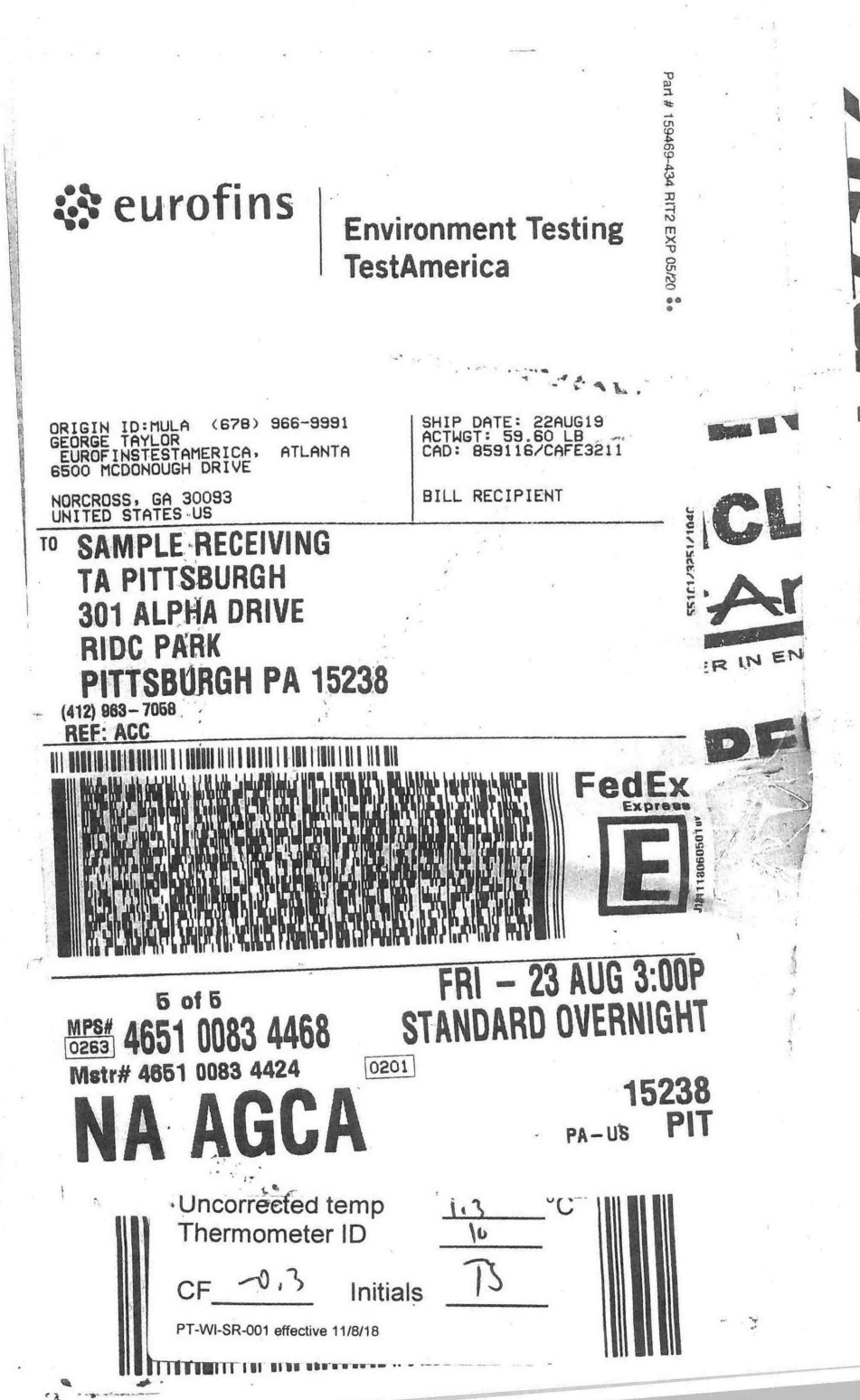
FRI - 23 AUG 3:00P
STANDARD OVERNIGHT

15238
PIT

NA AGCA

Uncorrected temp 1.9 °C
Thermometer ID 10
CF -0.3 Initials TS

PT-WI-SR-001 effective 11/8/18



eurofins | Environment Testing
TestAmerica

ORIGIN ID:MULA (678) 966-9991
GEORGE TAYLOR
EUROFINSTESTAMERICA, ATLANTA
6500 MCDONOUGH DRIVE

NORCROSS, GA 30093
UNITED STATES US

SHIP DATE: 22AUG19
ACTWGT: 59.60 LB
CAD: 859116/CAFE3211

BILL RECIPIENT

TO SAMPLE RECEIVING
TA PITTSBURGH
301 ALPHA DRIVE
RIDC PARK
PITTSBURGH PA 15238
(412) 963-7058
REF: ACC

FedEx Express

5 of 5
MPS# 0263 4651 0083 4468
Mstr# 4651 0083 4424
0201

FRI - 23 AUG 3:00P
STANDARD OVERNIGHT

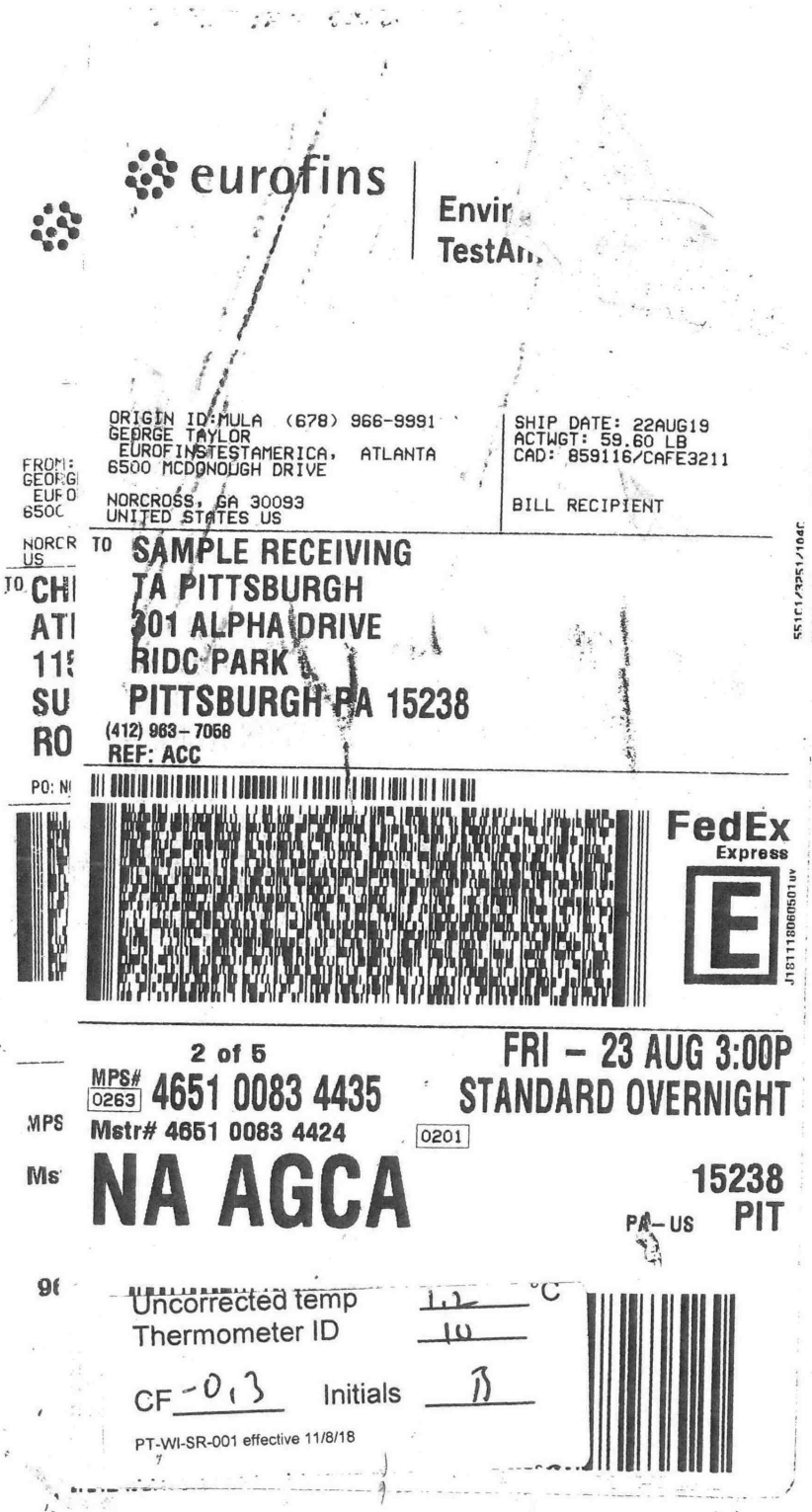
15238
PA-US PIT

NA AGCA

Uncorrected temp 1.3 °C
Thermometer ID 10
CF -0.3 Initials TS

PT-WI-SR-001 effective 11/8/18

Part # 159469-434 RIT2 EXP 05/20



eurofins | Envir... TestAm...

ORIGIN ID:MULA (678) 966-9991
GEORGE TAYLOR
EUROFINSTESTAMERICA, ATLANTA
6500 MCDONOUGH DRIVE

NORCROSS, GA 30093
UNITED STATES US

SHIP DATE: 22AUG19
ACTWGT: 59.60 LB
CAD: 859116/CAFE3211

BILL RECIPIENT

FROM: GEORG... EUF... 650C... NORCR... US

TO SAMPLE RECEIVING
TA PITTSBURGH
301 ALPHA DRIVE
RIDC PARK
PITTSBURGH PA 15238
(412) 963-7068
REF: ACC

TO CH... ATI... 11... SU... RO...

PO: N...

FedEx Express

2 of 5
MPS# 0263 4651 0083 4435
Mstr# 4651 0083 4424

FRI – 23 AUG 3:00P
STANDARD OVERNIGHT

0201

NA AGCA

15238
PA-US PIT

Uncorrected temp 1.2 °C
Thermometer ID 10
CF -0.3 Initials JJ

PT-WI-SR-001 effective 11/8/18

Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-94596-2
SDG Number: 1

Login Number: 94596
List Number: 1
Creator: Watson, Debbie

List Source: Eurofins TestAmerica, Pittsburgh

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-94596-2
SDG Number: 1

Login Number: 94596
List Number: 2
Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis
List Creation: 08/27/19 03:53 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	22.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

LEVEL 2A LABORATORY DATA VALIDATIONS

Plant Arkwright Ash Pond 2

Scan Event

August 2019

Georgia Power Company – Plant Arkwright Ash Pond 2

Quality Control Review of Analytical Data – August 2019

This narrative presents results of the Quality Control (QC) data review performed on analytical data submitted by Eurofins TestAmerica, Pittsburgh and St. Louis for groundwater samples collected at Plant Arkwright Ash Pond 2 on August 20, 2019. 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 of this Appendix.

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 detected 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 (USEPA Method 300.0), Solids in Water (Standard Methods 2540C), Radium-226 (USEPA 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 Inorganic Data by Inductively Coupled Plasma – Atomic Emission Spectroscopy and Inductively Coupled Plasma – Mass Spectroscopy (September 2011, Rev. 2.0)[1] and the National Functional Guidelines for Inorganic Superfund Methods Data Review (January 2017)[2]. The review included an assessment of the results for completeness, precision (laboratory duplicate recoveries and matrix spike/matrix spike duplicate recoveries), accuracy (laboratory control samples and matrix spike samples), and blank contamination (field, equipment, and laboratory blanks). Sample receipt conditions, holding times, and chains of custody (COCs) were reviewed. Where there was a discrepancy between the QC criteria in the guidelines and the QC criterion established in the analytical methodology, method-specific criteria or professional judgment were used.

DATA QUALITY OBJECTIVES

Laboratory Precision: Laboratory goals for precision were met.

Field Precision: Field goals for precision were met, with the exception of Fluoride on ARGWA-20 (180-94596-2) and DUP-2 (180-94596-6) as described in the qualifications section below.

Accuracy: Laboratory goals for accuracy were met.

Detection Limits: Project goals for detection limits were met.

Completeness: There were no rejected analytical results for this event, resulting in a completion of 100%.

Holding Times: Holding time requirements were met.

QUALIFICATIONS

In general, chemical results for the samples collected at the site were qualified on the basis of low precision or low 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 validation process:

J: The analyte was positively identified above the method detection limit; however, the associated numerical value is the approximate concentration of the analyte in the sample

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. The applied qualifications may not have been required for all samples collected at the site. A summary of sample qualifications can be found in Table 2 of this Appendix.

- Samples ARGWA-20 (180-94596-2) and DUP-2 (180-94596-6) were qualified as estimated (J) for Fluoride as the field relative percent difference (RPD) exceeded QC criteria (30.1% above limit of 25).

Atlantic Coast Consulting, Inc. reviewed the laboratory data from the Plant Arkwright Ash Pond 2 sampled on August 20, 2019 in accordance with the analytical methods, the laboratory-specified QC criteria, and the guidelines. As described above, the results were acceptable for project use.

REFERENCES

[1]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

[2]USEPA, January 2017, National Office of Superfund Remediation and Technology Innovation, National Functional Guidelines for Inorganic Superfund Methods Data Review, Revision 0.0

TABLE 1

Georgia Power Company – Plant Arkwright Ash Pond 2

Sample Summary Table – August 2019

						Analyses			
SDG	Field Identification	Collection Date	Lab Identification	Matrix	QC Samples	Metals (6020B, 7470A)	Anions (300.0)	TDS (SM 2540C)	Radium-226/-228 (9315, 9320)
94596	ARGWA-19	8/20/2019	180-94596-1	GW		X	X	X	X
94596	ARGWA-20	8/20/2019	180-94596-2	GW		X	X	X	X
94596	ARGWC-21	8/20/2019	180-94596-3	GW		X	X	X	X
94596	EB-2-20-19	8/20/2019	180-94596-4	WQ	EB	X	X	X	X
94596	FB-2-20-19	8/20/2019	180-94596-5	WQ	FB	X	X	X	X
94596	DUP-2	8/20/2019	180-94596-6	GW	FD (ARGWA-20)	X	X	X	X

Abbreviations:
EB – Equipment Blank
FB – Field Blank
FD – Field Duplicate
GW – Groundwater
QC – Quality Control
TDS – Total Dissolved Solids
WQ – Water Quality Control

TABLE 2

Georgia Power Company – Plant Arkwright Ash Pond 2

Qualifier Summary Table – August 2019

SDG	Field Identification	Constituent	New RL	New MDL or MDC	Qualifier	Reason
94596	ARGWA-20	Fluoride			J	RPD exceeds field goal
94596	DUP-2	Fluoride			J	RPD exceeds field goal

Abbreviations:
MDC – Minimum Detectable Concentration
MS/MSD – Matrix Spike / Matrix Spike Duplicate
MDL – Method Detection Limit
RL – Reporting Limit
RPD – Relative Percent Difference
SDG – Sample Delivery Group

Qualifiers:
J – Estimated Result
ND – Non-Detect Result

Product Name: Low-Flow System

Date: 2019-08-20 13:27:08

Project Information:		Pump Information: QED	
Operator Name	Taylor Goble	Bladder	QED Bladder
Company Name	Atlantic Coast Consulting	Pump Model/Type	poly
Project Name	Plant Arkwright	Tubing Type poly	.17 in
Site Name	Plant Arkwright - Ash Pond 2	Tubing Diameter 0.17 inches	52 ft
Latitude	0° 0' 0"	Tubing Length 53	
Longitude	0° 0' 0"		
Sonde SN	573204		
Turbidity Make/Model	Hach 2100Q		47 ft
		Pump placement from TOC	

Well Information:		Pumping Information:	150 mL/min
Well ID	ARGWA-19	Final Pumping Rate	0.322098 L
Well diameter	2 in	Total System Volume	300 sec
Well Total Depth	52.74 ft	Calculated Sample Rate	0 in
Screen Length	10 ft	Stabilization Drawdown	22 L
Depth to Water	29.62 ft	Total Volume Pumped	

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 3%	+/- 10		+/- 0.3	+/- 10
Last 5	13:01:19	8432.90	22.86	5.89	195.00	0.84	29.62	4.69	370.21
Last 5	13:11:20	9033.89	22.75	5.90	194.98	0.80	29.62	6.12	332.07
Last 5	13:16:20	9333.89	22.71	5.88	195.27	0.77	29.62	5.17	321.04
Last 5	13:21:20	9633.88	23.39	5.89	194.56	0.74	29.62	5.43	330.04
Last 5	13:26:22	9935.87	23.50	5.90	194.90	0.66	29.62	5.11	324.76
Variance 0			-0.04	-0.01	0.29			-0.95	-11.04
Variance 1			0.69	0.01	-0.71			0.26	9.00
Variance 2			0.10	0.00	0.34			-0.31	-5.28

Notes

Sampled at 1326. Sunny 86 degrees

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-20 09:55:59

Project Information:		Pump Information: QED	
Operator Name	Taylor Goble	Bladder	
Company Name	Atlantic Coast Consulting	Pump Model/Type	
Project Name	Plant Arkwright	Tubing Type poly	in
Site Name	Plant Arkwright - Ash Pond 2	Tubing Diameter 0.17	ft
Latitude	0° 0' 0"	Tubing Length 37	
Longitude	0° 0' 0"		
Sonde SN	573204		
Turbidity Make/Model	Hach 2100Q		ft
		Pump placement from TOC	

Well Information:			
Well ID	ARGWA-20	Pumping Information:	350 mL/min
Well diameter	in	Final Pumping Rate	0.09 L
Well Total Depth	37.70 ft	Total System Volume	300 sec
Screen Length	10 ft	Calculated Sample Rate	2 in
Depth to Water	16.76 ft	Stabilization Drawdown	14 L
		Total Volume Pumped	

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpC µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 3%	+/- 10		+/- 0.3	+/- 10
Last 5	09:34:06	1500.01	18.73	5.54	126.61	4.39	16.96	6.22	171.76
Last 5	09:39:06	1800.01	18.64	5.55	127.22	4.42	16.95	6.14	172.84
Last 5	09:44:06	2100.01	18.69	5.56	128.07	4.31	16.95	6.08	179.76
Last 5	09:49:06	2400.00	18.69	5.56	128.12	4.42	16.95	6.28	178.99
Last 5	09:54:06	2700.00	18.64	5.57	128.48	4.44	16.95	6.05	176.32
Variance 0			0.04	0.01	0.85			-0.06	6.92
Variance 1			0.00	0.01	0.04			0.20	-0.77
Variance 2			-0.05	0.01	0.37			-0.23	-2.68

Notes

Sampled at 0954. Sunny 78 degrees

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-20 15:12:14

Project Information:		Pump Information:	
Operator Name	Taylor Goble	Pump Model/Type	QED BLADDER
Company Name	Atlantic Coast Consulting	Tubing Type	poly
Project Name	Plant Arkwright	Tubing Diameter	.17 in
Site Name	Plant Arkwright - Ash Pond 2	Tubing Length	27 ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	573204		
Turbidity Make/Model	Hach 2100Q	Pump placement from TOC	22 ft

Well Information:		Pumping Information:	
Well ID	ARGWC-21	Final Pumping Rate	50 mL/min
Well diameter	2 in	Total System Volume	0.2105124 L
Well Total Depth	27.28 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	13 in
Depth to Water	14.49 ft	Total Volume Pumped	3.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 3%	+/- 10		+/- 0.3	+/- 10
Last 5	14:51:16	2401.00	25.00	6.09	590.84	8.81	15.45	0.91	51.66
Last 5	14:56:16	2700.98	24.96	6.09	591.24	8.33	15.47	0.80	50.75
Last 5	15:01:18	3002.99	24.99	6.09	589.67	6.65	15.50	0.75	50.13
Last 5	15:06:18	3302.99	25.18	6.08	591.56	5.72	15.52	0.70	48.60
Last 5	15:11:18	3602.98	25.39	6.08	591.32	4.88	15.55	0.67	47.33
Variance 0			0.03	0.00	-1.57			-0.05	-0.62
Variance 1			0.18	-0.00	1.89			-0.06	-1.53
Variance 2			0.21	0.00	-0.24			-0.03	-1.28

Notes

Sampled 1512. Sunny 89 degrees

Grab Samples

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-97057-1
Laboratory Sample Delivery Group: AP2
Client Project/Site: CCR - Plant Arkwright Ash Pond 2
Revision: 1

For:
Southern Company
241 Ralph McGill Blvd SE
B10185
Atlanta, Georgia 30308

Attn: Joju Abraham

Veronica Bortot

Authorized for release by:
12/16/2019 10:12:17 PM

Veronica Bortot, Senior Project Manager
(412)963-2435
veronica.bortot@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

PA Lab ID: 02-00416

Table of Contents

Case Narrative

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-97057-1
SDG: AP2

Job ID: 180-97057-1

Laboratory: Eurofins TestAmerica, Pittsburgh

Narrative

Job Narrative
180-97057-1

Revised: to deleted duplicate selenium results

Comments
No additional comments.

Receipt
The samples were received on 10/10/2019 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.1º C, 2.1º C and 2.4º C.

GC Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

RAD
Method 9315: Radium-226 Prep Batch 160-446085

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.
DUP-2 (180-97057-1), ARGWA-19 (180-97057-2), FB-2-10-7-19 (180-97057-3), ARGWA-20 (180-97057-4), ARGWC-21 (180-97057-5), EB-2-10-8-19 (180-97057-6), (LCS 160-446085/1-A), (MB 160-446085/21-A), (310-167066-C-3-A), (310-167066-D-3-A MS) and (310-167066-D-3-B MSD)

Method 9320: Ra-228 Prep Batch 160-446088
Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

DUP-2 (180-97057-1), ARGWA-19 (180-97057-2), FB-2-10-7-19 (180-97057-3), ARGWA-20 (180-97057-4), ARGWC-21 (180-97057-5), EB-2-10-8-19 (180-97057-6), (LCS 160-446088/1-A), (MB 160-446088/21-A), (310-167066-C-3-B), (310-167066-D-3-C MS) and (310-167066-D-3-D MSD)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-97057-1
SDG: AP2

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Accreditation/Certification Summary

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-97057-1
SDG: AP2

Laboratory: Eurofins TestAmerica, Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	19-033-0	06-27-20
California	State	2891	04-30-20
Connecticut	State	PH-0688	09-30-20
Florida	NELAP	E871008	06-30-20
Georgia	State	PA 02-00416	04-30-20
Illinois	NELAP	004375	06-30-20
Kansas	NELAP	E-10350	03-31-20
Kentucky (UST)	State	162013	04-30-20
Kentucky (WW)	State	KY98043	12-31-19
Louisiana	NELAP	04041	06-30-20
Minnesota	NELAP	042-999-482	12-31-19
Nevada	State	PA00164	07-31-20
New Hampshire	NELAP	2030	04-04-20
New Jersey	NELAP	PA005	06-30-20
New York	NELAP	11182	04-01-20
North Carolina (WW/SW)	State	434	12-31-19
North Dakota	State	R-227	04-30-20
Oregon	NELAP	PA-2151	02-06-20
Pennsylvania	NELAP	02-00416	04-30-20
Rhode Island	State	LAO00362	12-30-19
South Carolina	State	89014	04-30-20
Texas	NELAP	T104704528	03-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	Federal	P-Soil-01	06-26-22
USDA	US Federal Programs	P330-16-00211	06-26-22
Utah	NELAP	PA001462019-8	05-31-20
Virginia	NELAP	10043	09-15-20
West Virginia DEP	State	142	01-31-20
Wisconsin	State	998027800	08-31-20

Accreditation/Certification Summary

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-97057-1
SDG: AP2

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-19
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Illinois	NELAP	004553	11-30-19
Iowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-19
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-19
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
West Virginia DEP	State	381	12-31-19

Sample Summary

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-97057-1
SDG: AP2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
180-97057-1	DUP-2	Water	10/07/19 00:00	10/10/19 09:00	
180-97057-2	ARGWA-19	Water	10/07/19 13:25	10/10/19 09:00	
180-97057-3	FB-2-10-7-19	Water	10/07/19 13:20	10/10/19 09:00	
180-97057-4	ARGWA-20	Water	10/07/19 14:40	10/10/19 09:00	
180-97057-5	ARGWC-21	Water	10/08/19 15:30	10/10/19 09:00	
180-97057-6	EB-2-10-8-19	Water	10/08/19 15:15	10/10/19 09:00	

Method Summary

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-97057-1
SDG: AP2

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL PIT
EPA 6020	Metals (ICP/MS)	SW846	TAL PIT
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL PIT
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL PIT
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
None = None
SM = "Standard Methods For The Examination Of Water And Wastewater"
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL PIT = Eurofins TestAmerica, Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058
TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Lab Chronicle

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-97057-1
SDG: AP2

Client Sample ID: DUP-2
Date Collected: 10/07/19 00:00
Date Received: 10/10/19 09:00

Lab Sample ID: 180-97057-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			296903	11/03/19 05:48	MJH	TAL PIT
	Instrument ID: CHICS2100B									
Total Recoverable	Prep	3005A			50 mL	50 mL	294901	10/15/19 12:22	MWW	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			295911	10/23/19 14:31	WTR	TAL PIT
	Instrument ID: NEMO									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	294600	10/11/19 12:06	AGP	TAL PIT
	Instrument ID: NOEQUIP									
Total/NA	Prep	PrecSep-21			1000.42 mL	1.0 g	446085	10/14/19 15:32	ORM	TAL SL
Total/NA	Analysis	9315		1			449238	11/06/19 09:32	AJD	TAL SL
	Instrument ID: GFPCBLUE									
Total/NA	Prep	PrecSep_0			1000.42 mL	1.0 g	446088	10/14/19 16:21	ORM	TAL SL
Total/NA	Analysis	9320		1			448159	10/29/19 17:41	AJD	TAL SL
	Instrument ID: GFPCPROTEAN									
Total/NA	Analysis	Ra226_Ra228		1			449547	11/08/19 07:24	SMP	TAL SL
	Instrument ID: NOEQUIP									

Client Sample ID: ARGWA-19
Date Collected: 10/07/19 13:25
Date Received: 10/10/19 09:00

Lab Sample ID: 180-97057-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			296903	11/03/19 06:04	MJH	TAL PIT
	Instrument ID: CHICS2100B									
Total Recoverable	Prep	3005A			50 mL	50 mL	294901	10/15/19 12:22	MWW	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			295911	10/23/19 14:34	WTR	TAL PIT
	Instrument ID: NEMO									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	294600	10/11/19 12:06	AGP	TAL PIT
	Instrument ID: NOEQUIP									
Total/NA	Prep	PrecSep-21			1000.77 mL	1.0 g	446085	10/14/19 15:32	ORM	TAL SL
Total/NA	Analysis	9315		1			449238	11/06/19 09:32	AJD	TAL SL
	Instrument ID: GFPCBLUE									
Total/NA	Prep	PrecSep_0			1000.77 mL	1.0 g	446088	10/14/19 16:21	ORM	TAL SL
Total/NA	Analysis	9320		1			448159	10/29/19 17:41	AJD	TAL SL
	Instrument ID: GFPCPROTEAN									
Total/NA	Analysis	Ra226_Ra228		1			449547	11/08/19 07:24	SMP	TAL SL
	Instrument ID: NOEQUIP									

Client Sample ID: FB-2-10-7-19
Date Collected: 10/07/19 13:20
Date Received: 10/10/19 09:00

Lab Sample ID: 180-97057-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			296903	11/03/19 07:23	MJH	TAL PIT
	Instrument ID: CHICS2100B									

Lab Chronicle

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-97057-1
SDG: AP2

Client Sample ID: FB-2-10-7-19
Date Collected: 10/07/19 13:20
Date Received: 10/10/19 09:00

Lab Sample ID: 180-97057-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	294901	10/15/19 12:22	MWW	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			295911	10/23/19 14:36	WTR	TAL PIT
	Instrument ID: NEMO									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	294600	10/11/19 12:06	AGP	TAL PIT
	Instrument ID: NOEQUIP									
Total/NA	Prep	PrecSep-21			1000.22 mL	1.0 g	446085	10/14/19 15:32	ORM	TAL SL
Total/NA	Analysis	9315		1			449238	11/06/19 09:32	AJD	TAL SL
	Instrument ID: GFPCBLUE									
Total/NA	Prep	PrecSep_0			1000.22 mL	1.0 g	446088	10/14/19 16:21	ORM	TAL SL
Total/NA	Analysis	9320		1			448159	10/29/19 17:42	AJD	TAL SL
	Instrument ID: GFPCPROTEAN									
Total/NA	Analysis	Ra226_Ra228		1			449547	11/08/19 07:24	SMP	TAL SL
	Instrument ID: NOEQUIP									

Client Sample ID: ARGWA-20
Date Collected: 10/07/19 14:40
Date Received: 10/10/19 09:00

Lab Sample ID: 180-97057-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			296903	11/03/19 07:54	MJH	TAL PIT
	Instrument ID: CHICS2100B									
Total Recoverable	Prep	3005A			50 mL	50 mL	294901	10/15/19 12:22	MWW	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			295911	10/23/19 14:38	WTR	TAL PIT
	Instrument ID: NEMO									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	294600	10/11/19 12:06	AGP	TAL PIT
	Instrument ID: NOEQUIP									
Total/NA	Prep	PrecSep-21			1000.40 mL	1.0 g	446085	10/14/19 15:32	ORM	TAL SL
Total/NA	Analysis	9315		1			449238	11/06/19 09:32	AJD	TAL SL
	Instrument ID: GFPCBLUE									
Total/NA	Prep	PrecSep_0			1000.40 mL	1.0 g	446088	10/14/19 16:21	ORM	TAL SL
Total/NA	Analysis	9320		1			448159	10/29/19 17:42	AJD	TAL SL
	Instrument ID: GFPCPROTEAN									
Total/NA	Analysis	Ra226_Ra228		1			449547	11/08/19 07:24	SMP	TAL SL
	Instrument ID: NOEQUIP									

Client Sample ID: ARGWC-21
Date Collected: 10/08/19 15:30
Date Received: 10/10/19 09:00

Lab Sample ID: 180-97057-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			296903	11/03/19 06:19	MJH	TAL PIT
	Instrument ID: CHICS2100B									
Total Recoverable	Prep	3005A			50 mL	50 mL	294901	10/15/19 12:22	MWW	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			295911	10/23/19 14:41	WTR	TAL PIT
	Instrument ID: NEMO									

Lab Chronicle

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-97057-1
SDG: AP2

Client Sample ID: ARGWC-21

Date Collected: 10/08/19 15:30
Date Received: 10/10/19 09:00

Lab Sample ID: 180-97057-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	294600	10/11/19 12:06	AGP	TAL PIT
Total/NA	Prep	PrecSep-21			1000.02 mL	1.0 g	446085	10/14/19 15:32	ORM	TAL SL
Total/NA	Analysis	9315		1			449238	11/06/19 09:32	AJD	TAL SL
	Instrument ID: GFPCBLUE									
Total/NA	Prep	PrecSep_0			1000.02 mL	1.0 g	446088	10/14/19 16:21	ORM	TAL SL
Total/NA	Analysis	9320		1			448159	10/29/19 17:42	AJD	TAL SL
	Instrument ID: GFPCPROTEAN									
Total/NA	Analysis	Ra226_Ra228		1			449547	11/08/19 07:24	SMP	TAL SL
	Instrument ID: NOEQUIP									

Client Sample ID: EB-2-10-8-19

Date Collected: 10/08/19 15:15
Date Received: 10/10/19 09:00

Lab Sample ID: 180-97057-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			296903	11/03/19 07:38	MJH	TAL PIT
	Instrument ID: CHICS2100B									
Total Recoverable	Prep	3005A			50 mL	50 mL	294901	10/15/19 12:22	MWW	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			295911	10/23/19 14:43	WTR	TAL PIT
	Instrument ID: NEMO									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	294600	10/11/19 12:06	AGP	TAL PIT
	Instrument ID: NOEQUIP									
Total/NA	Prep	PrecSep-21			1000.70 mL	1.0 g	446085	10/14/19 15:32	ORM	TAL SL
Total/NA	Analysis	9315		1			449238	11/06/19 12:15	AJD	TAL SL
	Instrument ID: GFPCBLUE									
Total/NA	Prep	PrecSep_0			1000.70 mL	1.0 g	446088	10/14/19 16:21	ORM	TAL SL
Total/NA	Analysis	9320		1			448159	10/29/19 17:42	AJD	TAL SL
	Instrument ID: GFPCPROTEAN									
Total/NA	Analysis	Ra226_Ra228		1			449547	11/08/19 07:24	SMP	TAL SL
	Instrument ID: NOEQUIP									

Laboratory References:

TAL PIT = Eurofins TestAmerica, Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Lab Chronicle

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-97057-1
SDG: AP2

Analyst References:

Lab: TAL PIT
- Batch Type: Prep
  - MWW = Margaret Wanyoike
- Batch Type: Analysis
  - AGP = Angela Partridge
  - MJH = Matthew Hartman
  - WTR = Bill Reinheimer

Lab: TAL SL
- Batch Type: Prep
  - ORM = Octavia Moore
- Batch Type: Analysis
  - AJD = Audra DeMariano
  - SMP = Siobhan Perry

Client Sample ID: DUP-2
Date Collected: 10/07/19 00:00
Date Received: 10/10/19 09:00

Lab Sample ID: 180-97057-1
Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.3		1.0	0.32	mg/L			11/03/19 05:48	1
Fluoride	0.036	J	0.20	0.026	mg/L			11/03/19 05:48	1
Sulfate	17		1.0	0.38	mg/L			11/03/19 05:48	1

Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00057	J B	0.0013	0.00032	mg/L		10/15/19 12:22	10/23/19 14:31	1
Barium	0.080		0.0025	0.0016	mg/L		10/15/19 12:22	10/23/19 14:31	1
Cadmium	0.00020	J B	0.0010	0.00013	mg/L		10/15/19 12:22	10/23/19 14:31	1
Lead	0.00033	J B	0.0010	0.00013	mg/L		10/15/19 12:22	10/23/19 14:31	1
Selenium	0.0025	J B	0.0050	0.0015	mg/L		10/15/19 12:22	10/23/19 14:31	1
Lithium	0.013		0.0050	0.0034	mg/L		10/15/19 12:22	10/23/19 14:31	1
Silver	0.00071	J B	0.0010	0.00018	mg/L		10/15/19 12:22	10/23/19 14:31	1
Calcium	8.9		0.50	0.13	mg/L		10/15/19 12:22	10/23/19 14:31	1
Boron	0.045	J	0.080	0.039	mg/L		10/15/19 12:22	10/23/19 14:31	1
Cobalt	0.00014	J	0.00050	0.000075	mg/L		10/15/19 12:22	10/23/19 14:31	1
Chromium	0.0059		0.0020	0.0015	mg/L		10/15/19 12:22	10/23/19 14:31	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	93		10	10	mg/L			10/11/19 12:06	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.439		0.142	0.148	1.00	0.141	pCi/L	10/14/19 15:32	11/06/19 09:32	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*82.5*		*40 - 110*	*10/14/19 15:32*	*11/06/19 09:32*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0820	U	0.297	0.297	1.00	0.518	pCi/L	10/14/19 16:21	10/29/19 17:41	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*82.5*		*40 - 110*	*10/14/19 16:21*	*10/29/19 17:41*	*1*
Y Carrier	*84.5*		*40 - 110*	*10/14/19 16:21*	*10/29/19 17:41*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.521		0.329	0.332	5.00	0.518	pCi/L		11/08/19 07:24	1

Client Sample ID: ARGWA-19

Date Collected: 10/07/19 13:25
Date Received: 10/10/19 09:00

Lab Sample ID: 180-97057-2

Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**11**		1.0	0.32	mg/L			11/03/19 06:04	1
Fluoride	**0.049**	**J**	0.20	0.026	mg/L			11/03/19 06:04	1
Sulfate	**7.4**		1.0	0.38	mg/L			11/03/19 06:04	1

Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		10/15/19 12:22	10/23/19 14:34	1
Barium	**0.049**		0.0025	0.0016	mg/L		10/15/19 12:22	10/23/19 14:34	1
Cadmium	<0.00013		0.0010	0.00013	mg/L		10/15/19 12:22	10/23/19 14:34	1
Lead	**0.00018**	**J B**	0.0010	0.00013	mg/L		10/15/19 12:22	10/23/19 14:34	1
Selenium	<0.0015		0.0050	0.0015	mg/L		10/15/19 12:22	10/23/19 14:34	1
Lithium	**0.013**	**B**	0.0050	0.0034	mg/L		10/15/19 12:22	10/23/19 14:34	1
Silver	**0.00056**	**J B**	0.0010	0.00018	mg/L		10/15/19 12:22	10/23/19 14:34	1
Calcium	**14**		0.50	0.13	mg/L		10/15/19 12:22	10/23/19 14:34	1
Boron	<0.039		0.080	0.039	mg/L		10/15/19 12:22	10/23/19 14:34	1
Cobalt	**0.00011**	**J**	0.00050	0.000075	mg/L		10/15/19 12:22	10/23/19 14:34	1
Chromium	<0.0015		0.0020	0.0015	mg/L		10/15/19 12:22	10/23/19 14:34	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**150**		10	10	mg/L			10/11/19 12:06	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.204**		0.110	0.112	1.00	0.145	pCi/L	10/14/19 15:32	11/06/19 09:32	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*80.8*		*40 - 110*	*10/14/19 15:32*	*11/06/19 09:32*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.273	U	0.311	0.312	1.00	0.512	pCi/L	10/14/19 16:21	10/29/19 17:41	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*80.8*		*40 - 110*	*10/14/19 16:21*	*10/29/19 17:41*	*1*
Y Carrier	*84.5*		*40 - 110*	*10/14/19 16:21*	*10/29/19 17:41*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.476	U	0.330	0.331	5.00	0.512	pCi/L		11/08/19 07:24	1

Client Sample ID: FB-2-10-7-19

Date Collected: 10/07/19 13:20
Date Received: 10/10/19 09:00

Lab Sample ID: 180-97057-3

Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.32		1.0	0.32	mg/L			11/03/19 07:23	1
Fluoride	**0.030**	**J**	0.20	0.026	mg/L			11/03/19 07:23	1
Sulfate	<0.38		1.0	0.38	mg/L			11/03/19 07:23	1

Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		10/15/19 12:22	10/23/19 14:36	1
Barium	<0.0016		0.0025	0.0016	mg/L		10/15/19 12:22	10/23/19 14:36	1
Cadmium	<0.00013		0.0010	0.00013	mg/L		10/15/19 12:22	10/23/19 14:36	1
Lead	**0.00014**	**J B**	0.0010	0.00013	mg/L		10/15/19 12:22	10/23/19 14:36	1
Selenium	<0.0015		0.0050	0.0015	mg/L		10/15/19 12:22	10/23/19 14:36	1
Lithium	**0.0080**	**B**	0.0050	0.0034	mg/L		10/15/19 12:22	10/23/19 14:36	1
Silver	**0.00032**	**J B**	0.0010	0.00018	mg/L		10/15/19 12:22	10/23/19 14:36	1
Calcium	<0.13		0.50	0.13	mg/L		10/15/19 12:22	10/23/19 14:36	1
Boron	<0.039		0.080	0.039	mg/L		10/15/19 12:22	10/23/19 14:36	1
Cobalt	<0.000075		0.00050	0.000075	mg/L		10/15/19 12:22	10/23/19 14:36	1
Chromium	<0.0015		0.0020	0.0015	mg/L		10/15/19 12:22	10/23/19 14:36	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			10/11/19 12:06	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.120	U	0.108	0.108	1.00	0.168	pCi/L	10/14/19 15:32	11/06/19 09:32	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*80.8*		*40 - 110*	*10/14/19 15:32*	*11/06/19 09:32*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0261	U	0.306	0.306	1.00	0.543	pCi/L	10/14/19 16:21	10/29/19 17:42	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*80.8*		*40 - 110*	*10/14/19 16:21*	*10/29/19 17:42*	*1*
Y Carrier	*83.4*		*40 - 110*	*10/14/19 16:21*	*10/29/19 17:42*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.146	U	0.324	0.324	5.00	0.543	pCi/L		11/08/19 07:24	1

Client Sample ID: ARGWA-20

Date Collected: 10/07/19 14:40
Date Received: 10/10/19 09:00

Lab Sample ID: 180-97057-4

Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**5.2**		1.0	0.32	mg/L			11/03/19 07:54	1
Fluoride	**0.036**	**J**	0.20	0.026	mg/L			11/03/19 07:54	1
Sulfate	**17**	**F1**	1.0	0.38	mg/L			11/03/19 07:54	1

Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		10/15/19 12:22	10/23/19 14:38	1
Barium	**0.076**		0.0025	0.0016	mg/L		10/15/19 12:22	10/23/19 14:38	1
Cadmium	<0.00013		0.0010	0.00013	mg/L		10/15/19 12:22	10/23/19 14:38	1
Lead	**0.00014**	**J B**	0.0010	0.00013	mg/L		10/15/19 12:22	10/23/19 14:38	1
Selenium	**0.0016**	**J B**	0.0050	0.0015	mg/L		10/15/19 12:22	10/23/19 14:38	1
Lithium	**0.0066**	**B**	0.0050	0.0034	mg/L		10/15/19 12:22	10/23/19 14:38	1
Silver	**0.00031**	**J B**	0.0010	0.00018	mg/L		10/15/19 12:22	10/23/19 14:38	1
Calcium	**8.9**		0.50	0.13	mg/L		10/15/19 12:22	10/23/19 14:38	1
Boron	<0.039		0.080	0.039	mg/L		10/15/19 12:22	10/23/19 14:38	1
Cobalt	<0.000075		0.00050	0.000075	mg/L		10/15/19 12:22	10/23/19 14:38	1
Chromium	**0.0059**		0.0020	0.0015	mg/L		10/15/19 12:22	10/23/19 14:38	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**87**		10	10	mg/L			10/11/19 12:06	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.209**		0.116	0.118	1.00	0.154	pCi/L	10/14/19 15:32	11/06/19 09:32	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*82.8*		*40 - 110*	*10/14/19 15:32*	*11/06/19 09:32*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.412	U	0.585	0.587	1.00	0.979	pCi/L	10/14/19 16:21	10/29/19 17:42	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*82.8*		*40 - 110*	*10/14/19 16:21*	*10/29/19 17:42*	*1*
Y Carrier	*44.5*		*40 - 110*	*10/14/19 16:21*	*10/29/19 17:42*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.621	U	0.596	0.599	5.00	0.979	pCi/L		11/08/19 07:24	1

Client Sample ID: ARGWC-21

Date Collected: 10/08/19 15:30
Date Received: 10/10/19 09:00

Lab Sample ID: 180-97057-5

Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**4.5**		1.0	0.32	mg/L			11/03/19 06:19	1
Fluoride	**0.065**	**J**	0.20	0.026	mg/L			11/03/19 06:19	1
Sulfate	**170**		1.0	0.38	mg/L			11/03/19 06:19	1

Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0012**	**J B**	0.0013	0.00032	mg/L		10/15/19 12:22	10/23/19 14:41	1
Barium	**0.096**		0.0025	0.0016	mg/L		10/15/19 12:22	10/23/19 14:41	1
Cadmium	<0.00013		0.0010	0.00013	mg/L		10/15/19 12:22	10/23/19 14:41	1
Lead	**0.00015**	**J B**	0.0010	0.00013	mg/L		10/15/19 12:22	10/23/19 14:41	1
Selenium	<0.0015		0.0050	0.0015	mg/L		10/15/19 12:22	10/23/19 14:41	1
Lithium	**0.015**	**B**	0.0050	0.0034	mg/L		10/15/19 12:22	10/23/19 14:41	1
Silver	**0.00043**	**J B**	0.0010	0.00018	mg/L		10/15/19 12:22	10/23/19 14:41	1
Calcium	**60**		0.50	0.13	mg/L		10/15/19 12:22	10/23/19 14:41	1
Boron	**0.58**		0.080	0.039	mg/L		10/15/19 12:22	10/23/19 14:41	1
Cobalt	**0.0018**		0.00050	0.000075	mg/L		10/15/19 12:22	10/23/19 14:41	1
Chromium	<0.0015		0.0020	0.0015	mg/L		10/15/19 12:22	10/23/19 14:41	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**420**		10	10	mg/L			10/11/19 12:06	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.270**		0.118	0.120	1.00	0.141	pCi/L	10/14/19 15:32	11/06/19 09:32	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*91.0*		*40 - 110*	*10/14/19 15:32*	*11/06/19 09:32*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.318	U	0.289	0.291	1.00	0.466	pCi/L	10/14/19 16:21	10/29/19 17:42	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*91.0*		*40 - 110*	*10/14/19 16:21*	*10/29/19 17:42*	*1*
Y Carrier	*86.7*		*40 - 110*	*10/14/19 16:21*	*10/29/19 17:42*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.588**		0.312	0.315	5.00	0.466	pCi/L		11/08/19 07:24	1

Client Sample ID: EB-2-10-8-19

Date Collected: 10/08/19 15:15
Date Received: 10/10/19 09:00

Lab Sample ID: 180-97057-6

Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.32		1.0	0.32	mg/L			11/03/19 07:38	1
Fluoride	**0.031**	**J**	0.20	0.026	mg/L			11/03/19 07:38	1
Sulfate	<0.38		1.0	0.38	mg/L			11/03/19 07:38	1

Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		10/15/19 12:22	10/23/19 14:43	1
Barium	<0.0016		0.0025	0.0016	mg/L		10/15/19 12:22	10/23/19 14:43	1
Cadmium	<0.00013		0.0010	0.00013	mg/L		10/15/19 12:22	10/23/19 14:43	1
Lead	<0.00013		0.0010	0.00013	mg/L		10/15/19 12:22	10/23/19 14:43	1
Selenium	<0.0015		0.0050	0.0015	mg/L		10/15/19 12:22	10/23/19 14:43	1
Lithium	**0.0063**	**B**	0.0050	0.0034	mg/L		10/15/19 12:22	10/23/19 14:43	1
Silver	**0.00032**	**J B**	0.0010	0.00018	mg/L		10/15/19 12:22	10/23/19 14:43	1
Calcium	<0.13		0.50	0.13	mg/L		10/15/19 12:22	10/23/19 14:43	1
Boron	<0.039		0.080	0.039	mg/L		10/15/19 12:22	10/23/19 14:43	1
Cobalt	<0.000075		0.00050	0.000075	mg/L		10/15/19 12:22	10/23/19 14:43	1
Chromium	<0.0015		0.0020	0.0015	mg/L		10/15/19 12:22	10/23/19 14:43	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			10/11/19 12:06	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.212**		0.103	0.105	1.00	0.130	pCi/L	10/14/19 15:32	11/06/19 12:15	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*91.5*		*40 - 110*	*10/14/19 15:32*	*11/06/19 12:15*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0570	U	0.284	0.284	1.00	0.513	pCi/L	10/14/19 16:21	10/29/19 17:42	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*91.5*		*40 - 110*	*10/14/19 16:21*	*10/29/19 17:42*	*1*
Y Carrier	*86.0*		*40 - 110*	*10/14/19 16:21*	*10/29/19 17:42*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.155	U	0.302	0.303	5.00	0.513	pCi/L		11/08/19 07:24	1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 180-296903/81
Matrix: Water
Analysis Batch: 296903

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.32		1.0	0.32	mg/L			11/03/19 01:51	1
Fluoride	<0.026		0.20	0.026	mg/L			11/03/19 01:51	1
Sulfate	<0.38		1.0	0.38	mg/L			11/03/19 01:51	1

Lab Sample ID: LCS 180-296903/80
Matrix: Water
Analysis Batch: 296903

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	48.5		mg/L		97	90 - 110
Fluoride	2.50	2.43		mg/L		97	90 - 110
Sulfate	50.0	49.1		mg/L		98	90 - 110

Lab Sample ID: 180-97057-4 MS
Matrix: Water
Analysis Batch: 296903

Client Sample ID: ARGWA-20
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.2		125	144		mg/L		111	80 - 120
Fluoride	0.036	J	6.25	5.75		mg/L		91	80 - 120
Sulfate	17	F1	125	198	F1	mg/L		145	80 - 120

Lab Sample ID: 180-97057-4 MSD
Matrix: Water
Analysis Batch: 296903

Client Sample ID: ARGWA-20
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	5.2		125	144		mg/L		111	80 - 120	0	20
Fluoride	0.036	J	6.25	5.80		mg/L		92	80 - 120	1	20
Sulfate	17	F1	125	198	F1	mg/L		145	80 - 120	0	20

Method: EPA 6020 - Metals (ICP/MS)

Lab Sample ID: MB 180-294901/1-A
Matrix: Water
Analysis Batch: 295911

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 294901

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.000358	J	0.0010	0.00032	mg/L		10/15/19 12:22	10/23/19 14:27	1
Barium	<0.0016		0.010	0.0016	mg/L		10/15/19 12:22	10/23/19 14:27	1
Cadmium	0.000268	J	0.0010	0.00013	mg/L		10/15/19 12:22	10/23/19 14:27	1
Lead	0.000420	J	0.0010	0.00013	mg/L		10/15/19 12:22	10/23/19 14:27	1
Selenium	0.00151	J	0.0050	0.0015	mg/L		10/15/19 12:22	10/23/19 14:27	1
Lithium	17.4		5.0	3.4	ug/L		10/15/19 12:22	10/23/19 14:27	1
Calcium	<0.13		0.50	0.13	mg/L		10/15/19 12:22	10/23/19 14:27	1
Boron	<0.039		0.080	0.039	mg/L		10/15/19 12:22	10/23/19 14:27	1
Cobalt	<0.075		0.50	0.075	ug/L		10/15/19 12:22	10/23/19 14:27	1
Chromium	<1.5		2.0	1.5	ug/L		10/15/19 12:22	10/23/19 14:27	1

Method: EPA 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 180-294901/1-A
Matrix: Water
Analysis Batch: 297456

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 294901

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	<3.4		5.0	3.4	ug/L		10/15/19 12:22	11/07/19 06:01	1
Calcium	<0.13		0.50	0.13	mg/L		10/15/19 12:22	11/07/19 06:01	1
Boron	<0.039		0.080	0.039	mg/L		10/15/19 12:22	11/07/19 06:01	1
Cobalt	<0.075		0.50	0.075	ug/L		10/15/19 12:22	11/07/19 06:01	1
Chromium	<1.5		2.0	1.5	ug/L		10/15/19 12:22	11/07/19 06:01	1

Lab Sample ID: LCS 180-294901/2-A
Matrix: Water
Analysis Batch: 295911

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 294901

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	0.926		mg/L		93	80 - 120
Barium	1.00	0.984		mg/L		98	80 - 120
Cadmium	0.500	0.499		mg/L		100	80 - 120
Lead	0.500	0.461		mg/L		92	80 - 120
Selenium	1.00	0.925		mg/L		92	80 - 120
Lithium	500	474		ug/L		95	80 - 120
Silver	0.250	0.215		mg/L		86	80 - 120
Calcium	25.0	25.4		mg/L		102	80 - 120
Boron	1.25	1.13		mg/L		91	80 - 120
Cobalt	500	462		ug/L		92	80 - 120
Chromium	500	495		ug/L		99	80 - 120

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 180-294600/2
Matrix: Water
Analysis Batch: 294600

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			10/11/19 12:06	1

Lab Sample ID: LCS 180-294600/1
Matrix: Water
Analysis Batch: 294600

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	633	628		mg/L		99	80 - 120

Lab Sample ID: 180-97057-5 DU
Matrix: Water
Analysis Batch: 294600

Client Sample ID: ARGWC-21
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	420		428		mg/L		0.9	10

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-446085/21-A
Matrix: Water
Analysis Batch: 449238

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 446085

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.07641	U	0.0764	0.0767	1.00	0.121	pCi/L	10/14/19 15:32	11/06/19 12:16	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.3*		*40 - 110*	*10/14/19 15:32*	*11/06/19 12:16*	*1*

Lab Sample ID: LCS 160-446085/1-A
Matrix: Water
Analysis Batch: 449238

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 446085

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	10.05		1.09	1.00	0.155	pCi/L	89	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*74.9*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-446088/21-A
Matrix: Water
Analysis Batch: 448150

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 446088

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2521	U	0.242	0.243	1.00	0.390	pCi/L	10/14/19 16:21	10/29/19 17:44	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.3*		*40 - 110*	*10/14/19 16:21*	*10/29/19 17:44*	*1*
Y Carrier	*86.0*		*40 - 110*	*10/14/19 16:21*	*10/29/19 17:44*	*1*

Lab Sample ID: LCS 160-446088/1-A
Matrix: Water
Analysis Batch: 448159

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 446088

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.45	10.31		1.28	1.00	0.646	pCi/L	109	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*74.9*		*40 - 110*
Y Carrier	*87.1*		*40 - 110*

HPLC/IC

Analysis Batch: 296903

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-97057-1	DUP-2	Total/NA	Water	300.0	
180-97057-2	ARGWA-19	Total/NA	Water	300.0	
180-97057-3	FB-2-10-7-19	Total/NA	Water	300.0	
180-97057-4	ARGWA-20	Total/NA	Water	300.0	
180-97057-5	ARGWC-21	Total/NA	Water	300.0	
180-97057-6	EB-2-10-8-19	Total/NA	Water	300.0	
MB 180-296903/81	Method Blank	Total/NA	Water	300.0	
LCS 180-296903/80	Lab Control Sample	Total/NA	Water	300.0	
180-97057-4 MS	ARGWA-20	Total/NA	Water	300.0	
180-97057-4 MSD	ARGWA-20	Total/NA	Water	300.0	

Metals

Prep Batch: 294901

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-97057-1	DUP-2	Total Recoverable	Water	3005A	
180-97057-2	ARGWA-19	Total Recoverable	Water	3005A	
180-97057-3	FB-2-10-7-19	Total Recoverable	Water	3005A	
180-97057-4	ARGWA-20	Total Recoverable	Water	3005A	
180-97057-5	ARGWC-21	Total Recoverable	Water	3005A	
180-97057-6	EB-2-10-8-19	Total Recoverable	Water	3005A	
MB 180-294901/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-294901/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 295911

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-97057-1	DUP-2	Total Recoverable	Water	EPA 6020	294901
180-97057-2	ARGWA-19	Total Recoverable	Water	EPA 6020	294901
180-97057-3	FB-2-10-7-19	Total Recoverable	Water	EPA 6020	294901
180-97057-4	ARGWA-20	Total Recoverable	Water	EPA 6020	294901
180-97057-5	ARGWC-21	Total Recoverable	Water	EPA 6020	294901
180-97057-6	EB-2-10-8-19	Total Recoverable	Water	EPA 6020	294901
MB 180-294901/1-A	Method Blank	Total Recoverable	Water	EPA 6020	294901
LCS 180-294901/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020	294901

Analysis Batch: 297456

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 180-294901/1-A	Method Blank	Total Recoverable	Water	EPA 6020	294901

General Chemistry

Analysis Batch: 294600

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-97057-1	DUP-2	Total/NA	Water	SM 2540C	
180-97057-2	ARGWA-19	Total/NA	Water	SM 2540C	
180-97057-3	FB-2-10-7-19	Total/NA	Water	SM 2540C	
180-97057-4	ARGWA-20	Total/NA	Water	SM 2540C	
180-97057-5	ARGWC-21	Total/NA	Water	SM 2540C	
180-97057-6	EB-2-10-8-19	Total/NA	Water	SM 2540C	
MB 180-294600/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-294600/1	Lab Control Sample	Total/NA	Water	SM 2540C	
180-97057-5 DU	ARGWC-21	Total/NA	Water	SM 2540C	

QC Association Summary

Client: Southern Company
Project/Site: CCR - Plant Arkwright Ash Pond 2

Job ID: 180-97057-1
SDG: AP2

Rad

Prep Batch: 446085

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-97057-1	DUP-2	Total/NA	Water	PrecSep-21	
180-97057-2	ARGWA-19	Total/NA	Water	PrecSep-21	
180-97057-3	FB-2-10-7-19	Total/NA	Water	PrecSep-21	
180-97057-4	ARGWA-20	Total/NA	Water	PrecSep-21	
180-97057-5	ARGWC-21	Total/NA	Water	PrecSep-21	
180-97057-6	EB-2-10-8-19	Total/NA	Water	PrecSep-21	
MB 160-446085/21-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-446085/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 446088

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-97057-1	DUP-2	Total/NA	Water	PrecSep_0	
180-97057-2	ARGWA-19	Total/NA	Water	PrecSep_0	
180-97057-3	FB-2-10-7-19	Total/NA	Water	PrecSep_0	
180-97057-4	ARGWA-20	Total/NA	Water	PrecSep_0	
180-97057-5	ARGWC-21	Total/NA	Water	PrecSep_0	
180-97057-6	EB-2-10-8-19	Total/NA	Water	PrecSep_0	
MB 160-446088/21-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-446088/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

TestAmerica Pitts

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: JBarford, AS	Lab PM:	Carrier Tracking No(s):	COC No: 400-73521-29028.1
Client Contact: Joju Abraham	Phone: 770-344-5948	E-Mail:		Page: Page
Company: Southern Company				Job #:
Address: PO BOX 2641 GSC8	Due Date Requested:			
City: Birmingham	TAT Requested (days):			
State, Zip: AL, 35291				
Phone:	PO #: SCS10347656			
Email: JAbraham@southernco.com	WO #:			
Project Name: CCR Plant Arkwright - Ash Pond 2	Project #: 40007712			
Site: Georgia	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Metals - App III (Boron, Calcium)	300_ORGFM_28D - Chloride, Fluoride & Sulfate, 2540C - TDS	State Metals (arsenic, barium, cadmium, lead, silver, and selenium)	Detected A4: Radium 226 & 228 (SW-846 9315/9320)	Detected A4: Metals (Arsenic, Barium, Chromium, Cobalt, Lithium, Selenium)	Total Number of containers	Special Instructions/Note:
			Preservation Code:										
DUP-2	—	—	G	Water	N	N	✓	✓	✓	✓	✓	3	
ARGWA-19	10-7-19	1325	G	Water	N	N	✓	✓	✓	✓	✓	3	
FB-2-10-7-19	10-7-19	1320	G	Water	N	N	✓	✓	✓	✓	✓	3	
ARGWA-20	10-7-19	1440	G	Water	N	N	✓	✓	✓	✓	✓	3	
ARGWC-21	10-8-19	1530	G	Water	N	N	✓	✓	✓	✓	✓	3	
EB-2-10-8-19	10-8-19	1515	G	Water	N	N	✓	✓	✓	✓	✓	3	
			G	Water									
			G	Water									
			G	Water									
			G	Water									
			G	Water									

180-97057 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		10-9-19 11:25	ACC		10/09/19 11:25	ETH
2		10/9/19 1600	ETH		10-10-19 9:00	TAL
3						

Custody Seals Intact: △ Yes △ No

Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

Ver: 08/04/2016

Detected APP IV: Arsenic, Barium, Chromium, Cobalt, Fluoride, Lithium, Selenium, Radium

NORCROSS, GA 30093
UNITED STATES US

BILL RECIPIENT

TO SAMPLE RECEIVING
EUROFINS TESTAMERICA PITTSBURGH
301 ALPHA DRIVE
RIDC PARK
PITTSBURGH PA 15238
(412) 963-7058
REF: ACC

FedEx Express

J18111806050luv

2 of 3
MPS# 0263 4651 0084 1481
Mstr# 4651 0084 1470
0201

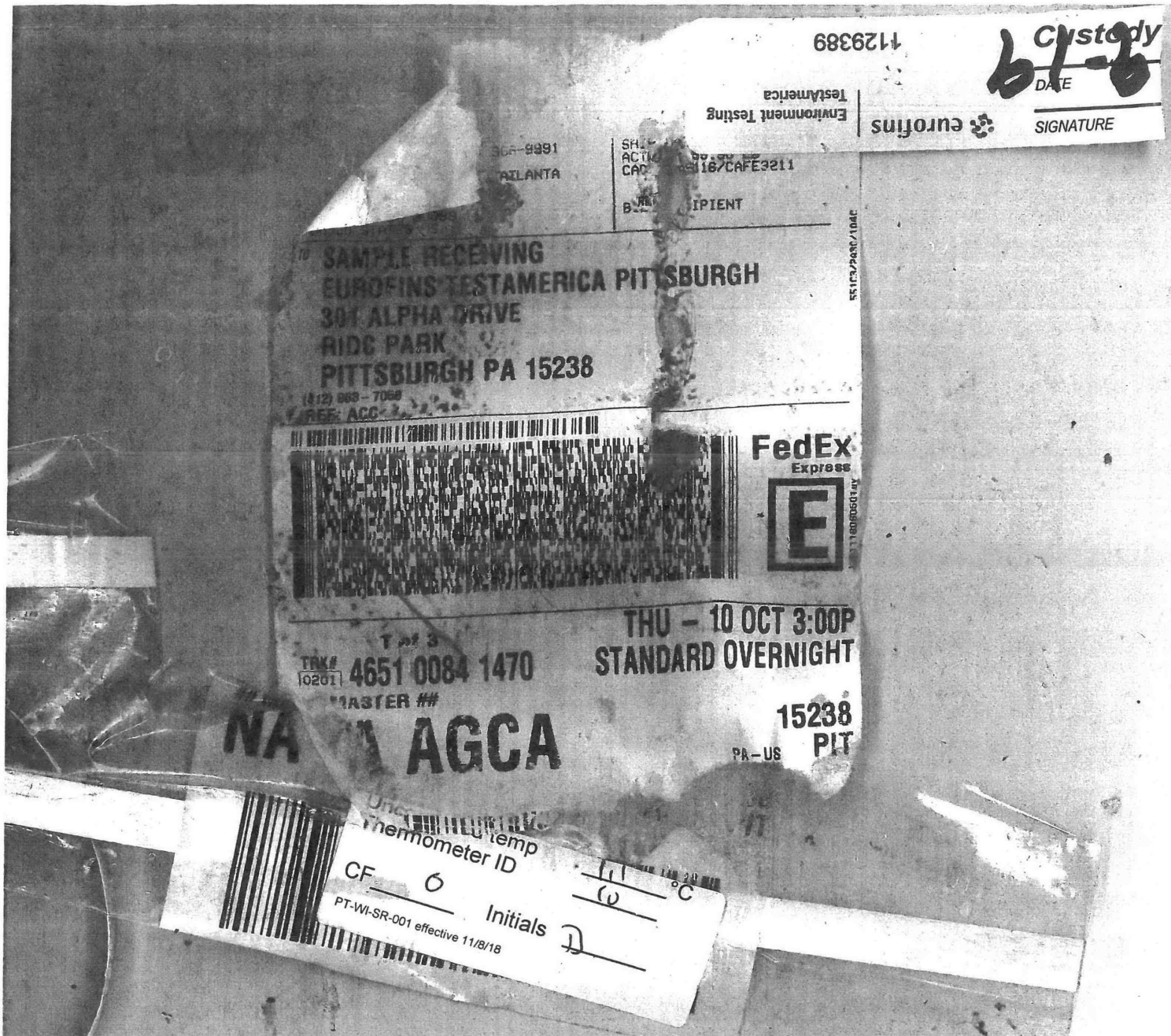
THU - 10 OCT 3:00P
STANDARD OVERNIGHT

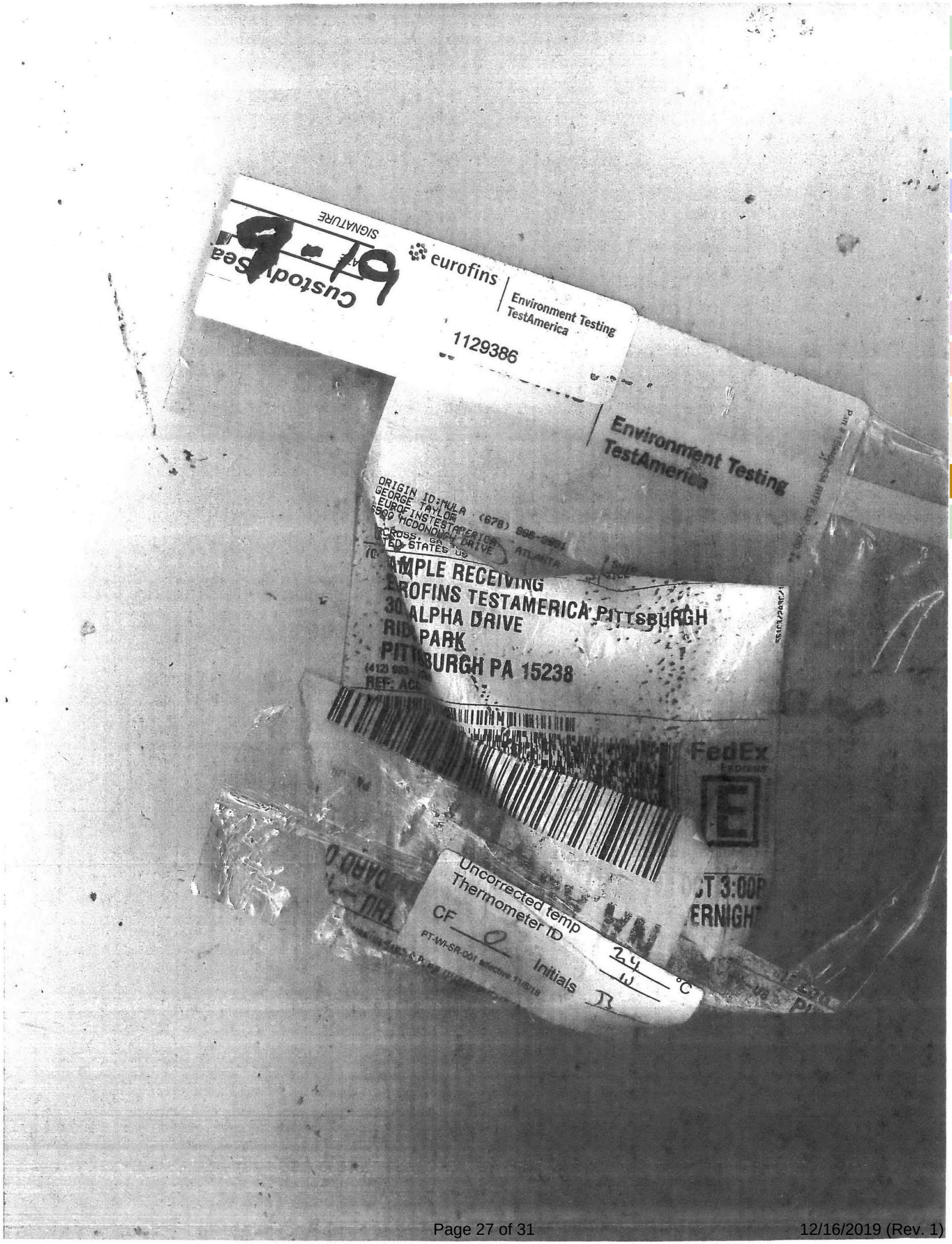
NA AGCA

15238
PA-US PIT

Uncorrected temp
Thermometer ID
CF 0
Initials
21.0 °C
PT-WI-SR-001 effective 11/8/18

180-97057 Waybill


Custody
DATE
SIGNATURE
eurofins
Environment Testing
TestAmerica
1129389
SAMPLE RECEIVING
EUROFINS TESTAMERICA PITTSBURGH
301 ALPHA DRIVE
RIDC PARK
PITTSBURGH PA 15238
FedEx
Express
THU - 10 OCT 3:00P
STANDARD OVERNIGHT
4651 0084 1470
15238
PIT
PA-US
AGCA
Thermometer ID
CF 6
Initials
PT-WI-SR-001 effective 11/8/18


Custody Sea
SIGNATURE
eurofins
Environment Testing
TestAmerica
1129386
Environment Testing
TestAmerica
ORIGIN ID:MULA
GEORGE TAYLOR
EUROFINS TESTAMERICA
500 MCDONOUGH DRIVE
ATLANTA
UNITED STATES US
MPLE RECEIVING
ROFINS TESTAMERICA PITTSBURGH
30 ALPHA DRIVE
RIDGE PARK
PITTSBURGH PA 15238
FedEx
Uncorrected temp
Thermometer ID
CF 0
Initials
24
W
°C

Eurofins TestAmerica, Pittsburgh
301 Alpha Drive RIDC Park
Pittsburgh, PA 15238
Phone: 412-963-7058 Fax: 412-963-2468

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bortot, Veronica	Carrier Tracking No(s):	COC No: 180-375855.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: veronica.bortot@testamericainc.com	State of Origin: Georgia	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 180-97057-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 10/22/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: CCR - Plant Arkwright Ash Pond 2	Project #: 18020201			
Site: Georgia Power Site Sampling Data (GW)	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Radium 226	9320_Ra228/PrecSep_0 Radium 228	Ra226Ra228_GFPC	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
DUP-2 (180-97057-1)	10/7/19	Eastern		Water			X	X	X	1	
ARGWA-19 (180-97057-2)	10/7/19	13:25 Eastern		Water			X	X	X	1	
FB-2-10-7-19 (180-97057-3)	10/7/19	13:20 Eastern		Water			X	X	X	1	
ARGWA-20 (180-97057-4)	10/7/19	14:40 Eastern		Water			X	X	X	1	
ARGWC-21 (180-97057-5)	10/8/19	15:30 Eastern		Water			X	X	X	1	
EB-2-10-8-19 (180-97057-6)	10/8/19	15:15 Eastern		Water			X	X	X	1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)***
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	10/10/19 1720			10-11-19 09:10	TAL SR
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica, Pittsburgh
301 Alpha Drive RIDC Park
Pittsburgh, PA 15238
Phone: 412-963-7058 Fax: 412-963-2468

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bortot, Veronica	Carrier Tracking No(s):	COC No: 180-375855.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: veronica.bortot@testamericainc.com	State of Origin: Georgia	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 180-97057-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 10/22/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: CCR - Plant Arkwright Ash Pond 2	Project #: 18020201			
Site: Georgia Power Site Sampling Data (GW)	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Radium 226	9320_Ra228/PrecSep_0 Radium 228	Ra226Ra228_GFPC	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
DUP-2 (180-97057-1)	10/7/19	Eastern		Water			X	X	X	1	
ARGWA-19 (180-97057-2)	10/7/19	13:25 Eastern		Water			X	X	X	1	
FB-2-10-7-19 (180-97057-3)	10/7/19	13:20 Eastern		Water			X	X	X	1	
ARGWA-20 (180-97057-4)	10/7/19	14:40 Eastern		Water			X	X	X	1	
ARGWC-21 (180-97057-5)	10/8/19	15:30 Eastern		Water			X	X	X	1	
EB-2-10-8-19 (180-97057-6)	10/8/19	15:15 Eastern		Water			X	X	X	1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		10/10/19 1700			10-11-19 09:10	TH STL
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-97057-1
SDG Number: AP2

Login Number: 97057
List Number: 1
Creator: Watson, Debbie

List Source: Eurofins TestAmerica, Pittsburgh

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-97057-1
SDG Number: AP2

Login Number: 97057
List Number: 2
Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis
List Creation: 10/11/19 01:51 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	18.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

LEVEL 2A LABORATORY DATA VALIDATIONS

Plant Arkwright Ash Pond 2

2nd Semi-Annual Event

October 2019

Georgia Power Company – Plant Arkwright Ash Pond 2

Quality Control Review of Analytical Data – October 2019

This narrative presents results of the Quality Control (QC) data review performed on analytical data submitted by Eurofins TestAmerica, Pittsburgh and St. Louis for groundwater samples collected at Plant Arkwright Ash Pond 2 between October 7, 2019 and October 8, 2019. 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 of this Appendix.

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 detected 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 (USEPA Method 300.0), Solids in Water (Standard Methods 2540C), Radium-226 (USEPA 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 Inorganic Data by Inductively Coupled Plasma – Atomic Emission Spectroscopy and Inductively Coupled Plasma – Mass Spectroscopy (September 2011, Rev. 2.0)[1] and the National Functional Guidelines for Inorganic Superfund Methods Data Review (January 2017)[2]. The review included an assessment of the results for completeness, precision (laboratory duplicate recoveries and matrix spike/matrix spike duplicate recoveries), accuracy (laboratory control samples and matrix spike samples), and blank contamination (field, equipment, and laboratory blanks). Sample receipt conditions, holding times, and chains of custody (COCs) were reviewed. Where there was a discrepancy between the QC criteria in the guidelines and the QC criterion established in the analytical methodology, method-specific criteria or professional judgment were used.

DATA QUALITY OBJECTIVES

Laboratory Precision: Laboratory goals for precision were met.

Field Precision: Field goals for precision were met, with the exceptions of Selenium, Lead, Lithium, and Silver on ARGWA-20 (180-97057-4) and DUP-2 (180-97057-1) as described in the qualifications section below.

Accuracy: Laboratory goals for accuracy were met, with the exception of Sulfate on ARGWA-20 (180-97057-4) as described in the qualifications section below.

Detection Limits: Project goals for detection limits were met.

Completeness: There were no rejected analytical results for this event, resulting in a completion of 100%.

Holding Times: Holding time requirements were met.

QUALIFICATIONS

In general, chemical results for the samples collected at the site were qualified on the basis of low precision or low 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 validation process:

J: The analyte was positively identified above the method detection limit; however, the associated numerical value is the approximate concentration of the analyte in the sample

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. The applied qualifications may not have been required for all samples collected at the site. A summary of sample qualifications can be found in Table 2 of this Appendix.

- Samples ARGWA-20 (180-97057-4) and DUP-2 (180-97057-1) were qualified as estimated (J) for Selenium, Lead, Lithium, and Silver as the respective field RPDs exceeded QC criteria (43.9%, 80.8%, 65.3%, and 78.4%, respectively, above limit of 25).

- Sample ARGWA-20 (180-97057-4) was qualified as estimated (J) for Sulfate as the matrix spike and matrix spike duplicate recoveries exceeded QC criteria (both 145% above range of 80-120).

- Certain metals analytes in SDG 97057 were qualified as non-detect (U) due to the analyte being detected at a similar concentration in an associated blank sample. As shown in Table 2, when the original sample result was above the reporting limit (RL), both the RL and method detection limit (MDL) were raised to the sample result as part of the qualification process. When the original sample result was between the RL, only the MDL was raised to the sample result as part of the qualification process.

- Certain radium results in SDG 97057 were qualified as non-detect (U) due to the analyte being detected at a similar concentration in an associated blank sample. As shown in Table 2, the minimum detectable concentration (MDC) was raised to the sample result as part of the qualification process.

Atlantic Coast Consulting, Inc. reviewed the laboratory data from the Plant Arkwright Ash Pond 2 sampled between October 7, 2019 and October 8, 2019 in accordance with the analytical methods, the laboratory-specified QC criteria, and the guidelines. As described above, the results were acceptable for project use.

REFERENCES

[1]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

[2]USEPA, January 2017, National Office of Superfund Remediation and Technology Innovation, National Functional Guidelines for Inorganic Superfund Methods Data Review, Revision 0.0

TABLE 1

Georgia Power Company – Plant Arkwright Ash Pond 2

Sample Summary Table – October 2019

						Analyses			
SDG	Field Identification	Collection Date	Lab Identification	Matrix	QC Samples	Metals (6020B, 7470A)	Anions (300.0)	TDS (SM 2540C)	Radium-226/-228 (9315, 9320)
97057	DUP-2	10/7/2019	180-97057-1	GW	FD (ARGWA-20)	X	X	X	X
97057	ARGWA-19	10/7/2019	180-97057-2	GW		X	X	X	X
97057	FB-2-10-7-19	10/7/2019	180-97057-3	WQ	FB	X	X	X	X
97057	ARGWA-20	10/7/2019	180-97057-4	GW		X	X	X	X
97057	ARGWC-21	10/8/2019	180-97057-5	GW		X	X	X	X
97057	EB-2-10-8-19	10/8/2019	180-97057-6	WQ	EB	X	X	X	X

Abbreviations:
EB – Equipment Blank
FB – Field Blank
FD – Field Duplicate
GW – Groundwater
QC – Quality Control
TDS – Total Dissolved Solids
WQ – Water Quality Control

TABLE 2

Georgia Power Company – Plant Arkwright Ash Pond 2

Qualifier Summary Table – October 2019

SDG	Field Identification	Constituent	New RL	New MDL or MDC	Qualifier	Reason
97057	ARGWA-19	Lead		0.00018	U	Blank detection
97057	ARGWA-19	Lithium	0.013	0.013	U	Blank detection
97057	ARGWA-19	Radium-228		0.273	U	Blank detection
97057	ARGWA-20	Sulfate			J	MS/MSD exceed QC criteria
97057	ARGWA-20	Selenium			J	RPD exceeds field goal
97057	ARGWA-20	Lead			J	RPD exceeds field goal
97057	ARGWA-20	Lithium			J	RPD exceeds field goal
97057	ARGWA-20	Silver			J	RPD exceeds field goal
97057	DUP-2	Selenium			J	RPD exceeds field goal
97057	DUP-2	Lead			J	RPD exceeds field goal
97057	DUP-2	Lithium			J	RPD exceeds field goal
97057	DUP-2	Silver			J	RPD exceeds field goal
97057	ARGWA-20	Radium-228		0.412	U	Blank detection
97057	ARGWC-21	Arsenic		0.0012	U	Blank detection
97057	ARGWC-21	Lead		0.00015	U	Blank detection
97057	ARGWC-21	Lithium	0.015	0.015	U	Blank detection
97057	ARGWC-21	Radium-228		0.318	U	Blank detection

Abbreviations:
MDC – Minimum Detectable Concentration
MS/MSD – Matrix Spike / Matrix Spike Duplicate
MDL – Method Detection Limit
RL – Reporting Limit
RPD – Relative Percent Difference
SDG – Sample Delivery Group

Qualifiers:
J – Estimated Result
ND – Non-Detect Result

Product Name: Low-Flow System

Date: 2019-10-07 13:27:13

Project Information:		Pump Information:	
Operator Name	Jordan Berisford	Pump Model/Type	QED Bladder Pump
Company Name	Atlantic Coast Consulting	Tubing Type	poly
Project Name	Plant Arkwright - Ash Pond 2	Tubing Diameter	0.25 in
Site Name	Plant Arkwright	Tubing Length	52 ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	588863		
Turbidity Make/Model	HACH 2100Q	Pump placement from TOC	47 ft

Well Information:		Pumping Information:	
Well ID	ARGWA-19	Final Pumping Rate	150 mL/min
Well diameter	2 in	Total System Volume	0.986942 L
Well Total Depth	52.74 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	1.9 in
Depth to Water	30.49 ft	Total Volume Pumped	3.75 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 100	+/- 0.1	+/- 5%	+/- 100		+/- 10%	+/- 100
Last 5	13:05:16	300.09	26.69	6.20	204.96	0.62	30.60	4.25	79.12
Last 5	13:10:15	600.02	25.45	5.90	210.65	0.88	30.60	4.30	64.43
Last 5	13:15:15	900.02	23.95	5.87	208.87	0.97	30.60	4.23	61.76
Last 5	13:20:15	1200.01	23.25	5.88	208.15	0.39	30.60	4.25	61.35
Last 5	13:25:16	1501.01	23.97	5.89	207.68	0.51	30.60	4.23	59.19
Variance 0			-1.50	-0.03	-1.78			-0.07	-2.67
Variance 1			-0.70	0.01	-0.71			0.02	-0.41
Variance 2			0.72	0.01	-0.48			-0.02	-2.16

Notes

Sunny, 80s, sample Time -1325,FB-2-10-7-19 here at 1320

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-07 14:41:57

Project Information:		Pump Information:	
Operator Name	Jordan Berisford	Pump Model/Type	QED Bladder Pump
Company Name	Atlantic Coast Consulting	Tubing Type	poly
Project Name	Plant Arkwright - Ash Pond 2	Tubing Diameter	0.25 in
Site Name	Plant Arkwright	Tubing Length	37 ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	588863		
Turbidity Make/Model	HACH 2100Q	Pump placement from TOC	32 ft

Well Information:		Pumping Information:	
Well ID	ARGWA-20	Final Pumping Rate	350 mL/min
Well diameter	2 in	Total System Volume	0.8421511 L
Well Total Depth	37.70 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	0.4 in
Depth to Water	18.00 ft	Total Volume Pumped	12.25 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 100	+/- 0.1	+/- 5%	+/- 100		+/- 10%	+/- 100
Last 5	14:20:11	900.01	18.46	5.63	133.94	1.58	18.20	6.07	55.65
Last 5	14:25:11	1200.01	18.25	5.63	141.71	1.83	18.20	5.99	57.62
Last 5	14:30:11	1500.01	18.07	5.63	134.83	1.92	18.20	6.13	58.18
Last 5	14:35:11	1800.00	18.02	5.66	135.54	2.84	18.20	5.97	57.99
Last 5	14:40:12	2101.00	17.87	5.65	136.31	2.06	18.20	6.03	59.89
Variance 0			-0.18	0.00	-6.88			0.14	0.56
Variance 1			-0.05	0.03	0.71			-0.16	-0.19
Variance 2			-0.16	-0.01	0.77			0.06	1.89

Notes

Sunny, 80s sample Time 1440, DUP-2 here

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-08 15:33:03

Project Information:		Pump Information:	
Operator Name	Anna Schnittker	Pump Model/Type	QED Bladder Pump
Company Name	Atlantic Coast Consulting	Tubing Type	poly
Project Name	Plant Arkwright - Ash Pond 2	Tubing Diameter	.25 in
Site Name	Plant Arkwright	Tubing Length	27 ft
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	647057		
Turbidity Make/Model	HACH 2100Q	Pump placement from TOC	22 ft

Well Information:		Pumping Information:	
Well ID	ARGWC-21	Final Pumping Rate	60 mL/min
Well diameter	2 in	Total System Volume	0.7456238 L
Well Total Depth	27.28 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	16 in
Depth to Water	14.43 ft	Total Volume Pumped	3 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 100	+/- 0.1	+/- 5%	+/- 100		+/- 10%	+/- 100
Last 5	15:10:40	1800.47	24.31	6.10	630.74	7.89	15.74	0.72	93.79
Last 5	15:15:40	2100.47	24.33	6.10	632.84	6.42	15.86	0.66	91.04
Last 5	15:20:41	2401.47	24.82	6.11	633.27	5.05	15.86	0.53	88.24
Last 5	15:25:41	2701.47	24.31	6.11	630.62	4.43	15.86	0.42	86.42
Last 5	15:30:42	3002.47	24.08	6.11	632.85	3.32	15.86	0.36	84.57
Variance 0			0.49	0.00	0.43			-0.14	-2.79
Variance 1			-0.51	0.00	-2.65			-0.11	-1.83
Variance 2			-0.23	0.00	2.23			-0.05	-1.85

Notes

Sunny, 85. Sample time: 15:30. Equipment Blank: Gloves @ 15:15.

Grab Samples

APPENDIX C

Statistical Analyses

100% ND

Date: 1/8/2020 2:11 PM

Plant Arkwright Client: Southern Company Data: Arkwright No 2

Cadmium (mg/L)

ARGWA-19, ARGWA-20, ARGWC-21

Interwell Prediction Limit

Plant Arkwright Client: Southern Company Data: Arkwright No 2 Printed 2/11/2020, 8:12 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Boron (mg/L)	**ARGWC-21**	**0.05259**	**n/a**	**10/8/2019**	**0.58**	**Yes**	**20**	**35**	**sqrt(x)**	**0.007498**	Param 1 of 2
Calcium (mg/L)	**ARGWC-21**	**13.99**	**n/a**	**10/8/2019**	**60**	**Yes**	**20**	**0**	**No**	**0.007498**	Param 1 of 2
pH (SU)	**ARGWC-21**	**5.973**	**5.498**	**10/8/2019**	**6.11**	**Yes**	**21**	**0**	**No**	**0.003749**	Param 1 of 2
Sulfate (mg/L)	**ARGWC-21**	**21**	**n/a**	**10/8/2019**	**170**	**Yes**	**45**	**0**	**n/a**	**0.000...**	NP (normality) 1 of 2
Total Dissolved Solids (mg/L)	**ARGWC-21**	**148.2**	**n/a**	**10/8/2019**	**420**	**Yes**	**20**	**0**	**No**	**0.007498**	Param 1 of 2

Interwell Prediction Limit

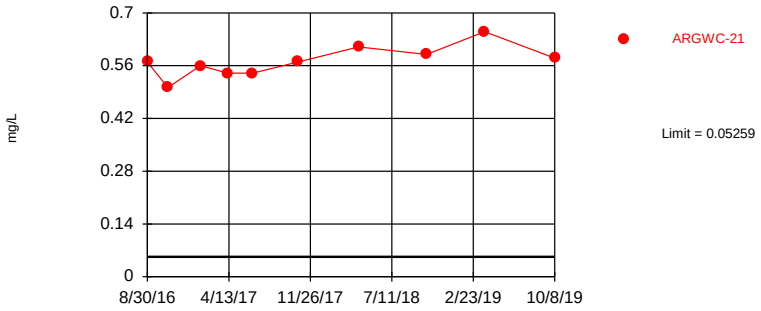
Plant Arkwright Client: Southern Company Data: Arkwright No 2 Printed 2/11/2020, 8:12 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Boron (mg/L)	**ARGWC-21**	**0.05259**	**n/a**	**10/8/2019**	**0.58**	**Yes**	**20**	**35**	**sqrt(x)**	**0.007498**	Param 1 of 2
Calcium (mg/L)	**ARGWC-21**	**13.99**	**n/a**	**10/8/2019**	**60**	**Yes**	**20**	**0**	**No**	**0.007498**	Param 1 of 2
Chloride (mg/L)	ARGWC-21	16.2	n/a	10/8/2019	4.5	No	45	0	n/a	0.000...	NP (normality) 1 of 2
Fluoride (mg/L)	ARGWC-21	0.1	n/a	10/8/2019	0.065	No	22	63.64	n/a	0.003707	NP (NDs) 1 of 2
pH (SU)	**ARGWC-21**	**5.973**	**5.498**	**10/8/2019**	**6.11**	**Yes**	**21**	**0**	**No**	**0.003749**	Param 1 of 2
Sulfate (mg/L)	**ARGWC-21**	**21**	**n/a**	**10/8/2019**	**170**	**Yes**	**45**	**0**	**n/a**	**0.000...**	NP (normality) 1 of 2
Total Dissolved Solids (mg/L)	**ARGWC-21**	**148.2**	**n/a**	**10/8/2019**	**420**	**Yes**	**20**	**0**	**No**	**0.007498**	Param 1 of 2

Exceeds Limit: ARGWC-21

Prediction Limit

Interwell Parametric



Background Data Summary (based on square root transformation) (after Kaplan-Meier Adjustment): Mean=0.1782, Std. Dev.=0.03351, n=20, 35% NDs. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8907, critical = 0.868. Kappa = 1.526 (c=7, w=1, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498.

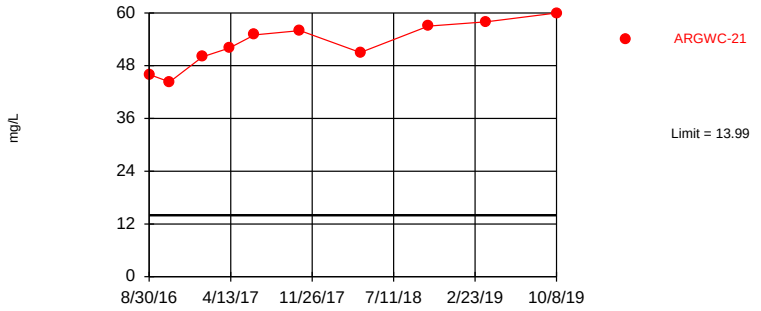
Constituent: Boron Analysis Run 2/11/2020 8:11 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

Exceeds Limit: ARGWC-21

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=10.83, Std. Dev.=2.071, n=20. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9524, critical = 0.868. Kappa = 1.526 (c=7, w=1, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498.

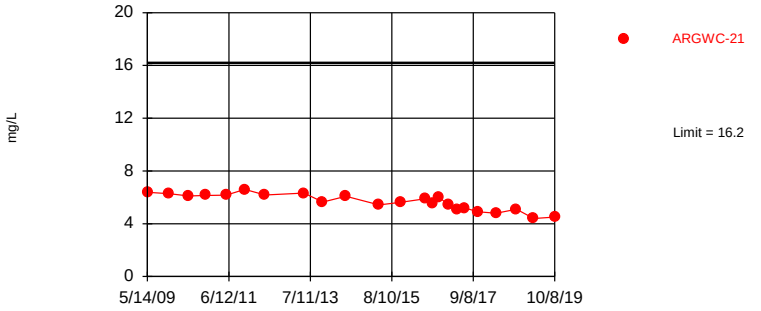
Constituent: Calcium Analysis Run 2/11/2020 8:11 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

Within Limit

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 45 background values. Annual per-constituent alpha = 0.001911. Individual comparison alpha = 0.0009557 (1 of 2). Seasonality was not detected with 95% confidence.

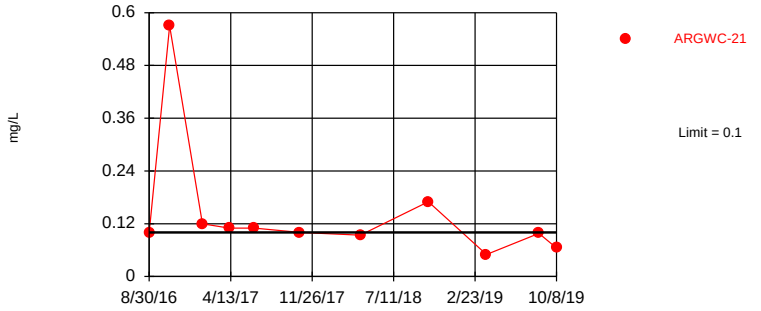
Constituent: Chloride Analysis Run 2/11/2020 8:11 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

Within Limit

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 22 background values. 63.64% NDs. Annual per-constituent alpha = 0.007401. Individual comparison alpha = 0.003707 (1 of 2). Insufficient data to test for seasonality; data will not be deseasonalized.

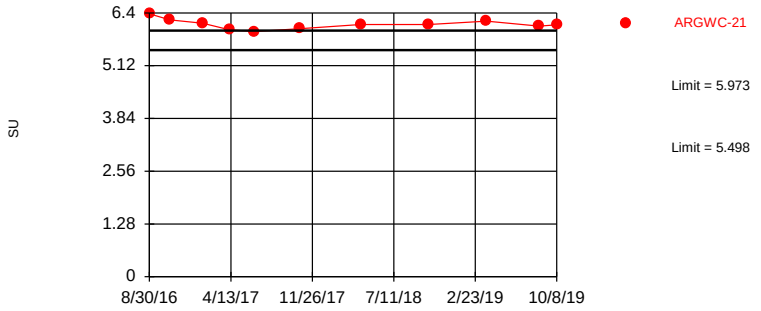
Constituent: Fluoride Analysis Run 2/11/2020 8:11 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

Exceeds Limits: ARGWC-21

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=5.736, Std. Dev.=0.1565, n=21. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9438, critical = 0.873. Kappa = 1.518 (c=7, w=1, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498.

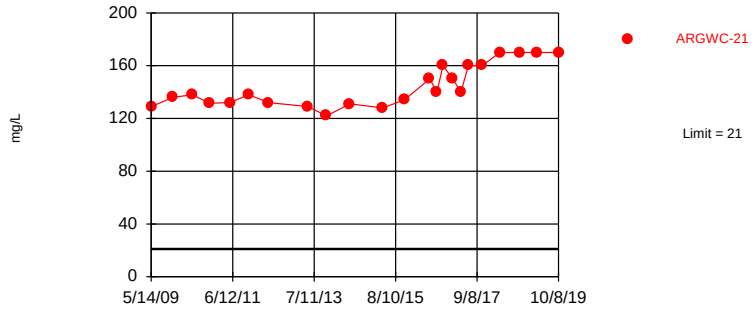
Constituent: pH Analysis Run 2/11/2020 8:11 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

Exceeds Limit: ARGWC-21

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 45 background values. Annual per-constituent alpha = 0.001911. Individual comparison alpha = 0.0009557 (1 of 2). Seasonality was not detected with 95% confidence.

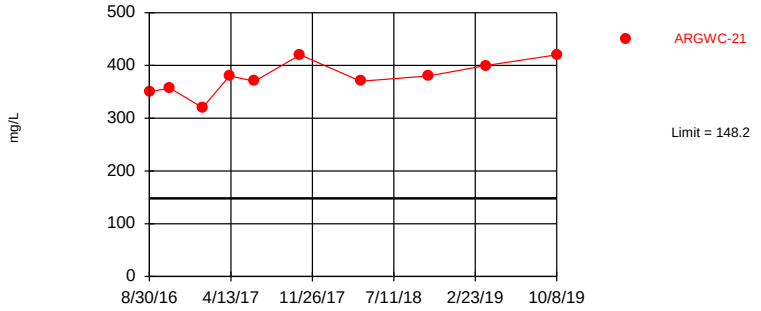
Constituent: Sulfate Analysis Run 2/11/2020 8:11 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

Exceeds Limit: ARGWC-21

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=112.1, Std. Dev.=23.68, n=20. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9639, critical = 0.868. Kappa = 1.526 (c=7, w=1, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498.

Constituent: Total Dissolved Solids Analysis Run 2/11/2020 8:11 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

Prediction Limit

Constituent: Boron (mg/L) Analysis Run 2/11/2020 8:12 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

	ARGWA-19 (bg)	ARGWA-20 (bg)	ARGWC-21
8/29/2016	0.024 (J)	<0.05	
8/30/2016			0.57
10/24/2016	0.0339 (J)	0.0194 (J)	
10/26/2016			0.502
1/25/2017	0.048 (J)	0.026 (J)	0.56
4/10/2017	0.022 (J)	<0.05	0.54
6/19/2017	<0.05		0.54
6/20/2017		0.032 (J)	
10/24/2017	0.021 (J)	0.054	0.57
4/9/2018		0.06	
4/10/2018	0.022 (J)		0.61
10/16/2018	<0.05	0.036 (J)	0.59
3/26/2019	<0.05		
3/27/2019		0.046 (J)	0.65
10/7/2019	<0.08	<0.08	
10/8/2019			0.58

Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 2/11/2020 8:12 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

	ARGWA-19 (bg)	ARGWA-20 (bg)	ARGWC-21
8/29/2016	11	8.3	
8/30/2016			46
10/24/2016	11.5	7.66	
10/26/2016			44.3
1/25/2017	13	9.4	50
4/10/2017	11	8.6	52
6/19/2017	12		55
6/20/2017		9.4	
10/24/2017	12	9.9	56
4/9/2018		9.9	
4/10/2018	12		51
10/16/2018	14	9.8	57
3/26/2019	15		
3/27/2019		9.2	58
10/7/2019	14	8.9	
10/8/2019			60

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 2/11/2020 8:12 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

	ARGWA-19 (bg)	ARGWC-21	ARGWA-20 (bg)
5/5/2009	11.1		
5/14/2009		6.38	
12/5/2009	9.46	6.28	5.06
6/1/2010	6.32		5.47
6/2/2010		6.1	
11/11/2010	7.16	6.1461	5.26
5/17/2011	6.84	6.17	4.8
11/8/2011	9.13	6.6	5.62
5/16/2012	10.8	6.18	5.1
5/14/2013	16.2	6.32	5.25
11/5/2013	14.8	5.65	5.19
6/9/2014	13.6	6.08	5.55
4/14/2015	10.4	5.43	5.39
10/29/2015		5.62	
11/4/2015	9.19		5.38
6/22/2016	8.4		5.7
6/23/2016		5.9	
8/29/2016	8.4		5.3
8/30/2016		5.5	
10/24/2016	9.6		5.4
10/26/2016		6	
1/25/2017	8.7	5.4	5.1
4/10/2017	8	5.1	4.9
6/19/2017	7.6	5.2	
6/20/2017			5
10/24/2017	7.2	4.9	4.6
4/9/2018			4.7
4/10/2018	7.2	4.8	
10/16/2018	10	5.1	5.3
3/26/2019	12		
3/27/2019		4.4	4.6
10/7/2019	11		5.2
10/8/2019		4.5	

Prediction Limit

Constituent: Fluoride (mg/L) Analysis Run 2/11/2020 8:12 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

	ARGWA-19 (bg)	ARGWA-20 (bg)	ARGWC-21
8/29/2016	<0.2	<0.2	
8/30/2016			0.099 (J)
10/24/2016	0.07 (J)	0.04 (J)	
10/26/2016			0.57
1/25/2017	<0.2	<0.2	0.12 (J)
4/10/2017	<0.2	<0.2	0.11 (J)
6/19/2017	<0.2		0.11 (J)
6/20/2017		<0.2	
10/24/2017	<0.2	<0.2	0.1 (J)
4/9/2018		<0.2	
4/10/2018	<0.2		0.094 (J)
10/16/2018	0.083 (J)	<0.2	0.17 (J)
3/26/2019	0.041 (J)		
3/27/2019		<0.2	0.05 (J)
8/20/2019	0.045 (J)	0.042 (J)	0.098 (J)
10/7/2019	0.049 (J)	0.036 (J)	
10/8/2019			0.065 (J)

Prediction Limit

Constituent: pH (SU) Analysis Run 2/11/2020 8:12 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

	ARGWA-19 (bg)	ARGWA-20 (bg)	ARGWC-21
8/29/2016		5.64	
8/30/2016			6.38
10/24/2016	5.81	5.6	
10/26/2016			6.23
1/25/2017	5.91	5.65	6.15
4/10/2017	5.74	5.42	5.99
6/19/2017	5.54		5.95
6/20/2017		5.59	
10/24/2017	5.82	5.58	6.02
4/9/2018		5.78	
4/10/2018	5.92		6.12
10/16/2018	5.94	5.69	6.12
3/26/2019	5.85		
3/27/2019		5.96	6.2
8/20/2019	5.9	5.57	6.08
10/7/2019	5.89	5.65	
10/8/2019			6.11

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 2/11/2020 8:12 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

	ARGWA-19 (bg)	ARGWC-21	ARGWA-20 (bg)
5/5/2009	15.9		
5/14/2009		129	
12/5/2009	15.1	136	16.2
6/1/2010	12.7		18.2
6/2/2010		138	
11/11/2010	11.5	131.49	16.5
5/17/2011	11.2	132	16
11/8/2011	11.3	138	21
5/16/2012	9.38	132	17.7
5/14/2013	8.74	129	19.5
11/5/2013	9.12	122	18.3
6/9/2014	8.61	131	18.6
4/14/2015	8.45	128	18.8
10/29/2015		134	
11/4/2015	9.01		17.4
6/22/2016	9.3		18
6/23/2016		150	
8/29/2016	8.7		18
8/30/2016		140	
10/24/2016	9.3		18
10/26/2016		160	
1/25/2017	8.8	150	19
4/10/2017	7.8	140	16
6/19/2017	8.6	160	
6/20/2017			18
10/24/2017	9.1	160	19
4/9/2018			18
4/10/2018	7.9	170	
10/16/2018	8.2	170	18
3/26/2019	6.1		
3/27/2019		170	15
10/7/2019	7.4		17
10/8/2019		170	

Prediction Limit

Constituent: Total Dissolved Solids (mg/L) Analysis Run 2/11/2020 8:12 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

	ARGWA-19 (bg)	ARGWA-20 (bg)	ARGWC-21
8/29/2016	130	100	
8/30/2016			350
10/24/2016	108	91	
10/26/2016			357
1/25/2017	120	90	320
4/10/2017	128 (D)	110	380
6/19/2017	86		370
6/20/2017		72	
10/24/2017	120	110	420
4/9/2018		100	
4/10/2018	120		370
10/16/2018	140	110	380
3/26/2019	170		
3/27/2019		100	400
10/7/2019	150	87	
10/8/2019			420

Interwell Prediction Limits All Results

Plant Arkwright Client: Southern Company Data: Arkwright No 2 Printed 2/20/2020, 3:30 PM

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Arsenic (mg/L)	ARGWC-21	0.005	10/8/2019	0.0012	No	50	86	n/a	0.0007528	NP (NDs) 1 of 2
Barium (mg/L)	ARGWC-21	0.1	10/8/2019	0.096	No	50	0	n/a	0.0007528	NP (normality) 1 of 2
Lead (mg/L)	ARGWC-21	0.013	10/8/2019	0.00015	No	50	94	n/a	0.0007528	NP (NDs) 1 of 2
Selenium (mg/L)	ARGWC-21	0.013	10/8/2019	0.005ND	No	50	62	n/a	0.0007528	NP (NDs) 1 of 2
Silver (mg/L)	ARGWC-21	0.01	10/8/2019	0.00043	No	42	90.48	n/a	0.001077	NP (NDs) 1 of 2

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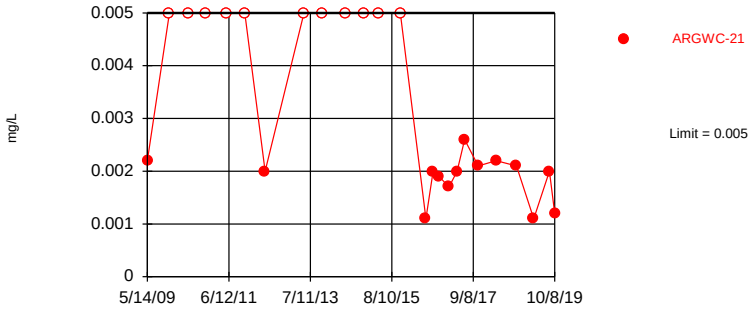
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 50 background values. 86% NDs. Annual per-constituent alpha = 0.001505. Individual comparison alpha = 0.0007528 (1 of 2).

Constituent: Arsenic Analysis Run 2/20/2020 3:12 PM View: Interwell PL

Plant Arkwright Client: Southern Company Data: Arkwright No 2

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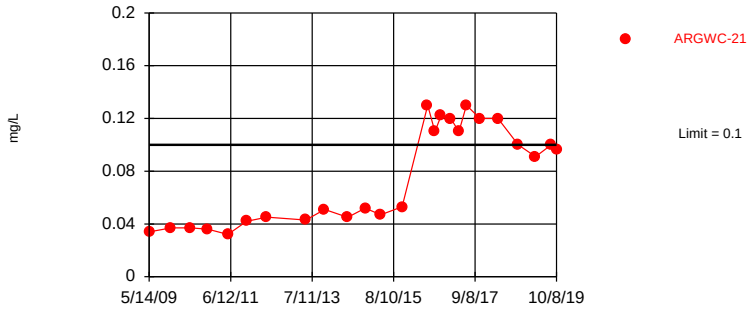
Within Limit

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 50 background values. Annual per-constituent alpha = 0.001505. Individual comparison alpha = 0.0007528 (1 of 2).

Constituent: Barium Analysis Run 2/20/2020 3:12 PM View: Interwell PL

Plant Arkwright Client: Southern Company Data: Arkwright No 2

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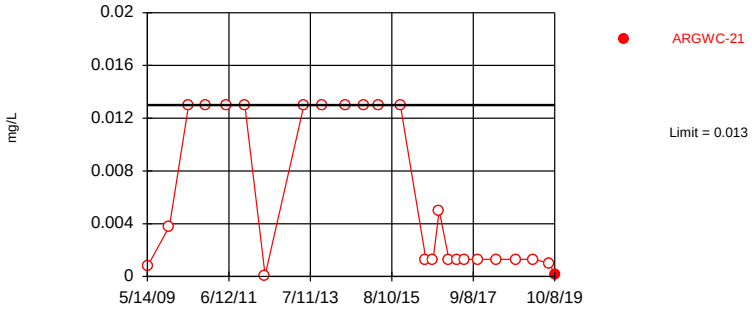
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 50 background values. 94% NDs. Annual per-constituent alpha = 0.001505. Individual comparison alpha = 0.0007528 (1 of 2).

Constituent: Lead Analysis Run 2/20/2020 3:12 PM View: Interwell PL

Plant Arkwright Client: Southern Company Data: Arkwright No 2

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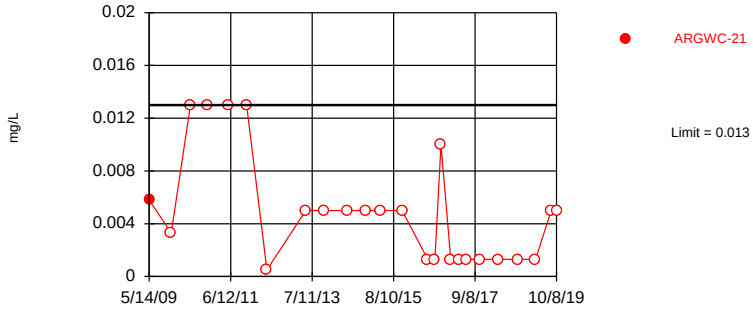
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 50 background values. 62% NDs. Annual per-constituent alpha = 0.001505. Individual comparison alpha = 0.0007528 (1 of 2).

Constituent: Selenium Analysis Run 2/20/2020 3:12 PM View: Interwell PL

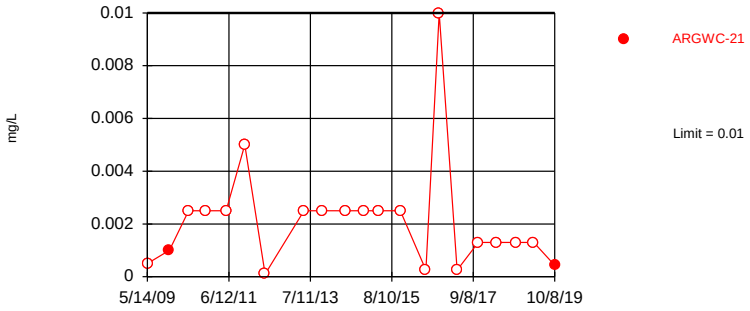
Plant Arkwright Client: Southern Company Data: Arkwright No 2

Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 42 background values. 90.48% NDs. Annual per-constituent alpha = 0.002154. Individual comparison alpha = 0.001077 (1 of 2).

Constituent: Silver Analysis Run 2/20/2020 3:12 PM View: Interwell PL

Plant Arkwright Client: Southern Company Data: Arkwright No 2

Prediction Limit

Constituent: Arsenic (mg/L) Analysis Run 2/20/2020 3:30 PM View: Interwell PL

Plant Arkwright Client: Southern Company Data: Arkwright No 2

	ARGWA-19 (bg)	ARGWC-21	ARGWA-20 (bg)
5/5/2009	<0.001		
5/14/2009		0.0022	
5/15/2009			0.0015
12/5/2009	<0.005	<0.005	<0.005
6/1/2010	<0.005		<0.005
6/2/2010		<0.005	
11/11/2010	<0.005	<0.005	<0.005
5/17/2011	<0.005	<0.005	<0.005
11/8/2011	<0.005	<0.005	<0.005
5/16/2012	<0.0012	0.002 (J)	<0.0012
5/14/2013	<0.005	<0.005	<0.005
11/5/2013	<0.005	<0.005	<0.005
6/9/2014	<0.005	<0.005	<0.005
11/18/2014		<0.005	<0.005
11/19/2014	<0.005		
4/14/2015	<0.005	<0.005	<0.005
10/29/2015		<0.005	
11/4/2015	<0.005		<0.005
6/22/2016	<0.0013		0.00084 (J)
6/23/2016		0.0011 (J)	
8/29/2016	<0.0013		0.00049 (J)
8/30/2016		0.002	
10/24/2016	<0.005		<0.005
10/26/2016		0.0019 (J)	
1/25/2017	<0.0013	0.0017	<0.0013
4/10/2017	<0.0013	0.002	0.00056 (J)
6/19/2017	<0.0013	0.0026	
6/20/2017			0.00068 (J)
10/24/2017	<0.0013	0.0021	<0.0013
4/9/2018			<0.0013
4/10/2018	<0.0013	0.0022	
10/16/2018	<0.0013	0.0021	<0.0013
3/26/2019	<0.0013		
3/27/2019		0.0011 (J)	<0.0013
8/20/2019	0.00036 (J)	0.002	0.00047 (J)
10/7/2019	<0.0013		<0.0013
10/8/2019		0.0012 (J)	

Prediction Limit

Constituent: Barium (mg/L) Analysis Run 2/20/2020 3:30 PM View: Interwell PL

Plant Arkwright Client: Southern Company Data: Arkwright No 2

	ARGWA-19 (bg)	ARGWC-21	ARGWA-20 (bg)
5/5/2009	0.057		
5/14/2009		0.034	
5/15/2009			0.1
12/5/2009	0.05	0.037	0.079
6/1/2010	0.037		0.077
6/2/2010		0.037	
11/11/2010	0.039	0.036	0.072
5/17/2011	0.037	0.032	0.064
11/8/2011	0.045	0.042	0.07
5/16/2012	0.0518	0.0451	0.0741
5/14/2013	0.067	0.043	0.074
11/5/2013	0.066	0.051	0.075
6/9/2014	0.062	0.045	0.08
11/18/2014		0.052	0.078
11/19/2014	0.054		
4/14/2015	0.046	0.047	0.073
10/29/2015		0.053	
11/4/2015	0.046		0.077
6/22/2016	0.039		0.078
6/23/2016		0.13	
8/29/2016	0.04		0.07
8/30/2016		0.11	
10/24/2016	0.0444		0.0738
10/26/2016		0.122	
1/25/2017	0.045	0.12	0.084
4/10/2017	0.039	0.11	0.073
6/19/2017	0.041	0.13	
6/20/2017			0.078
10/24/2017	0.041	0.12	0.081
4/9/2018			0.081
4/10/2018	0.044	0.12	
10/16/2018	0.047	0.1	0.08
3/26/2019	0.056		
3/27/2019		0.091	0.082
8/20/2019	0.052	0.1	0.079
10/7/2019	0.049		0.076
10/8/2019		0.096	

Prediction Limit

Constituent: Lead (mg/L) Analysis Run 2/20/2020 3:30 PM View: Interwell PL

Plant Arkwright Client: Southern Company Data: Arkwright No 2

	ARGWA-19 (bg)	ARGWC-21	ARGWA-20 (bg)
5/5/2009	<0.00075		
5/14/2009		<0.00075	
5/15/2009			<0.00075
12/5/2009	<0.0038	<0.0038	<0.0038
6/1/2010	<0.013		<0.013
6/2/2010		<0.013	
11/11/2010	<0.013	<0.013	<0.013
5/17/2011	<0.013	<0.013	<0.013
11/8/2011	<0.013	<0.013	<0.013
5/16/2012	<9E-05	<9E-05	<9E-05
5/14/2013	<0.013	<0.013	<0.013
11/5/2013	<0.013	<0.013	<0.013
6/9/2014	<0.013	<0.013	<0.013
11/18/2014		<0.013	<0.013
11/19/2014	<0.013		
4/14/2015	<0.013	<0.013	<0.013
10/29/2015		<0.013	
11/4/2015	<0.013		<0.013
6/22/2016	<0.0013		<0.0013
6/23/2016		<0.0013	
8/29/2016	<0.0013		<0.0013
8/30/2016		<0.0013	
10/24/2016	<0.005		<0.005
10/26/2016		<0.005	
1/25/2017	<0.0013	<0.0013	0.00037 (J)
4/10/2017	<0.0013	<0.0013	<0.0013
6/19/2017	<0.0013	<0.0013	
6/20/2017			<0.0013
10/24/2017	<0.0013	<0.0013	<0.0013
4/9/2018			<0.0013
4/10/2018	<0.0013	<0.0013	
10/16/2018	<0.0013	<0.0013	<0.0013
3/26/2019	<0.0013		
3/27/2019		<0.0013	<0.0013
8/20/2019	<0.001	<0.001	<0.001
10/7/2019	0.00018 (J)		0.00014 (J)
10/8/2019		0.00015 (J)	

Prediction Limit

Constituent: Selenium (mg/L) Analysis Run 2/20/2020 3:30 PM View: Interwell PL

Plant Arkwright Client: Southern Company Data: Arkwright No 2

	ARGWA-19 (bg)	ARGWC-21	ARGWA-20 (bg)
5/5/2009	0.0043		
5/14/2009		0.0058	
5/15/2009			0.007
12/5/2009	<0.0033	<0.0033	<0.0033
6/1/2010	<0.013		<0.013
6/2/2010		<0.013	
11/11/2010	<0.013	<0.013	<0.013
5/17/2011	<0.013	<0.013	<0.013
11/8/2011	<0.013	<0.013	<0.013
5/16/2012	<0.0005	<0.0005	0.0024 (J)
5/14/2013	<0.005	<0.005	<0.005
11/5/2013	<0.005	<0.005	<0.005
6/9/2014	<0.005	<0.005	<0.005
11/18/2014		<0.005	<0.005
11/19/2014	<0.005		
4/14/2015	<0.005	<0.005	<0.005
10/29/2015		<0.005	
11/4/2015	<0.005		<0.005
6/22/2016	0.00025 (J)		0.0019
6/23/2016		<0.0013	
8/29/2016	0.0004 (J)		0.0019
8/30/2016		<0.0013	
10/24/2016	<0.01		0.0023 (J)
10/26/2016		<0.01	
1/25/2017	<0.0013	<0.0013	0.0015
4/10/2017	<0.0013	<0.0013	0.0011 (J)
6/19/2017	0.00025 (J)	<0.0013	
6/20/2017			0.0016
10/24/2017	<0.0013	<0.0013	0.0012 (J)
4/9/2018			0.0012 (J)
4/10/2018	0.00074 (J)	<0.0013	
10/16/2018	<0.0013	<0.0013	0.0015
3/26/2019	<0.0013		
3/27/2019		<0.0013	0.0015
8/20/2019	<0.005	<0.005	0.0015 (J)
10/7/2019	<0.005		0.0016 (J)
10/8/2019		<0.005	

Prediction Limit

Constituent: Silver (mg/L) Analysis Run 2/20/2020 3:30 PM View: Interwell PL

Plant Arkwright Client: Southern Company Data: Arkwright No 2

	ARGWA-19 (bg)	ARGWC-21	ARGWA-20 (bg)
5/5/2009	<0.0005		
5/14/2009		<0.0005	
5/15/2009			<0.0005
12/5/2009	0.00075	0.001	0.00043
6/1/2010	<0.0025		<0.0025
6/2/2010		<0.0025	
11/11/2010	<0.0025	<0.0025	<0.0025
5/17/2011	<0.0025	<0.0025	<0.0025
11/8/2011	<0.005	<0.005	<0.005
5/16/2012	<0.0001	<0.0001	<0.0001
5/14/2013	<0.0025	<0.0025	<0.0025
11/5/2013	<0.0025	<0.0025	<0.0025
6/9/2014	<0.0025	<0.0025	<0.0025
11/18/2014		<0.0025	<0.0025
11/19/2014	<0.0025		
4/14/2015	<0.0025	<0.0025	<0.0025
10/29/2015		<0.0025	
11/4/2015	<0.0025		<0.0025
6/22/2016	<0.00025		<0.00025
6/23/2016		<0.00025	
10/24/2016	<0.01		<0.01
10/26/2016		<0.01	
4/10/2017	<0.00025	<0.00025	<0.00025
10/24/2017	<0.0013	<0.0013	<0.0013
4/9/2018			<0.0013
4/10/2018	<0.0013	<0.0013	
10/16/2018	<0.0013	<0.0013	<0.0013
3/26/2019	<0.0013		
3/27/2019		<0.0013	<0.0013
10/7/2019	0.00056 (J)		0.00031 (J)
10/8/2019		0.00043 (J)	

Trend Test

Plant Arkwright Client: Southern Company Data: Arkwright No 2 Printed 2/11/2020, 8:18 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Calcium (mg/L)	**ARGWA-19 ...**	**1**	**28**	**27**	**Yes**	**10**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Calcium (mg/L)	**ARGWC-21**	**4.506**	**37**	**27**	**Yes**	**10**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Sulfate (mg/L)	**ARGWA-19 ...**	**-0.4996**	**-180**	**-89**	**Yes**	**23**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Sulfate (mg/L)	**ARGWC-21**	**4.099**	**151**	**89**	**Yes**	**23**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Total Dissolved Solids (mg/L)	**ARGWC-21**	**21.35**	**28**	**27**	**Yes**	**10**	**0**	**n/a**	**n/a**	**0.02**	**NP**

Trend Test

Plant Arkwright Client: Southern Company Data: Arkwright No 2 Printed 2/11/2020, 8:18 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Boron (mg/L)	ARGWA-19 ...	0	3	27	No	10	40	n/a	n/a	0.02	NP
Boron (mg/L)	ARGWA-20 ...	0.008154	26	27	No	10	30	n/a	n/a	0.02	NP
Boron (mg/L)	ARGWC-21	0.02643	23	27	No	10	0	n/a	n/a	0.02	NP
Calcium (mg/L)	**ARGWA-19 ...**	**1**	**28**	**27**	**Yes**	**10**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Calcium (mg/L)	ARGWA-20 ...	0.3495	13	27	No	10	0	n/a	n/a	0.02	NP
Calcium (mg/L)	**ARGWC-21**	**4.506**	**37**	**27**	**Yes**	**10**	**0**	**n/a**	**n/a**	**0.02**	**NP**
pH (SU)	ARGWA-19 ...	0.03189	13	27	No	10	0	n/a	n/a	0.02	NP
pH (SU)	ARGWA-20 ...	0.02346	8	31	No	11	0	n/a	n/a	0.02	NP
pH (SU)	ARGWC-21	-0.02489	-12	-31	No	11	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	**ARGWA-19 ...**	**-0.4996**	**-180**	**-89**	**Yes**	**23**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Sulfate (mg/L)	ARGWA-20 ...	0	-16	-84	No	22	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	**ARGWC-21**	**4.099**	**151**	**89**	**Yes**	**23**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Total Dissolved Solids (mg/L)	ARGWA-19 ...	11.61	18	27	No	10	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	ARGWA-20 ...	0	-1	-27	No	10	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	**ARGWC-21**	**21.35**	**28**	**27**	**Yes**	**10**	**0**	**n/a**	**n/a**	**0.02**	**NP**

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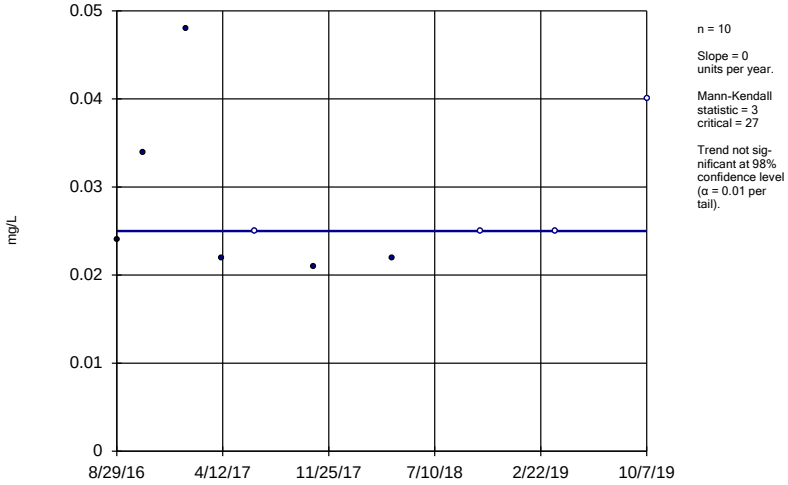
Sen's Slope Estimator

ARGWA-19 (bg)



n = 10

Slope = 0 units per year.

Mann-Kendall statistic = 3 critical = 27

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Boron Analysis Run 2/11/2020 8:17 PM View: Time Series
Plant Arkwright Client: Southern Company Data: Arkwright No 2

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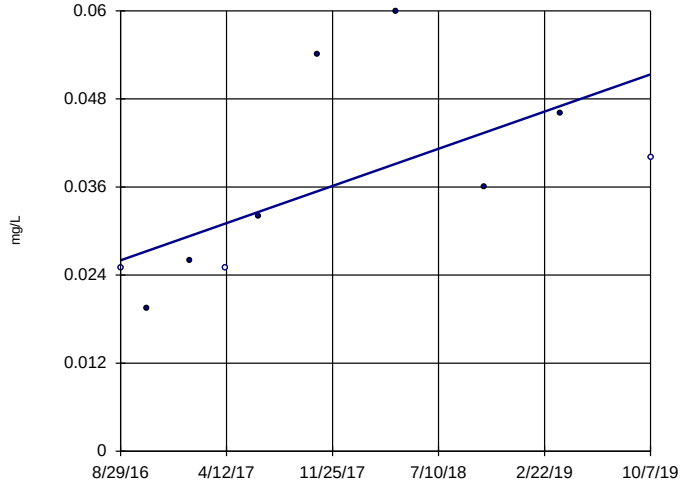
Hollow symbols indicate censored values.

Sen's Slope Estimator

ARGWA-20 (bg)



n = 10

Slope = 0.008154 units per year.

Mann-Kendall statistic = 26 critical = 27

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Boron Analysis Run 2/11/2020 8:17 PM View: Time Series
Plant Arkwright Client: Southern Company Data: Arkwright No 2

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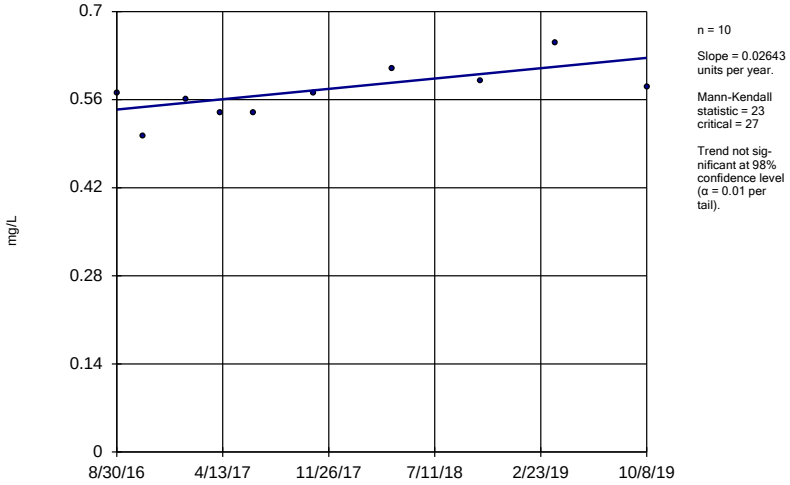
Sen's Slope Estimator

ARGWC-21



n = 10

Slope = 0.02643 units per year.

Mann-Kendall statistic = 23 critical = 27

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Boron Analysis Run 2/11/2020 8:17 PM View: Time Series
Plant Arkwright Client: Southern Company Data: Arkwright No 2

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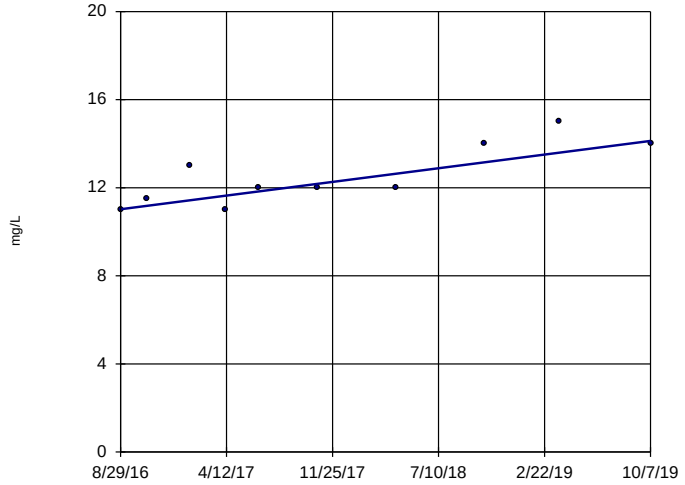
Sen's Slope Estimator

ARGWA-19 (bg)



n = 10

Slope = 1 units per year.

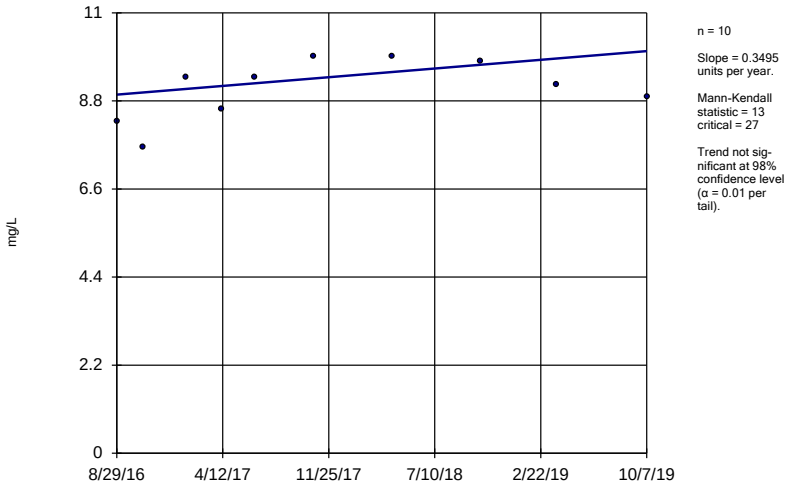
Mann-Kendall statistic = 28 critical = 27

Increasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: Calcium Analysis Run 2/11/2020 8:17 PM View: Time Series
Plant Arkwright Client: Southern Company Data: Arkwright No 2

Sen's Slope Estimator

ARGWA-20 (bg)



n = 10

Slope = 0.3495 units per year.

Mann-Kendall statistic = 13
critical = 27

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Calcium Analysis Run 2/11/2020 8:17 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

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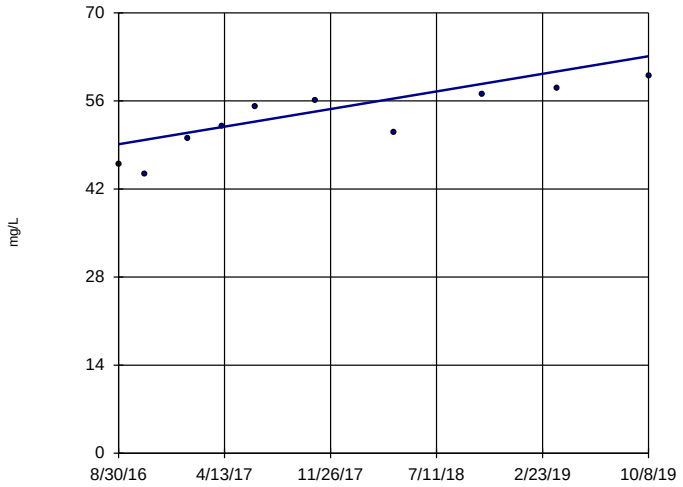
Sen's Slope Estimator

ARGWC-21



n = 10

Slope = 4.506 units per year.

Mann-Kendall statistic = 37
critical = 27

Increasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: Calcium Analysis Run 2/11/2020 8:17 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

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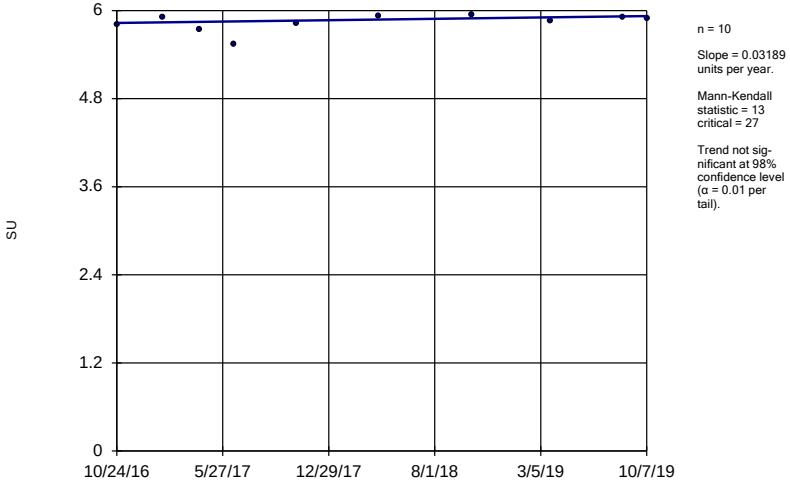
Sen's Slope Estimator

ARGWA-19 (bg)



n = 10

Slope = 0.03189 units per year.

Mann-Kendall statistic = 13
critical = 27

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: pH Analysis Run 2/11/2020 8:17 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

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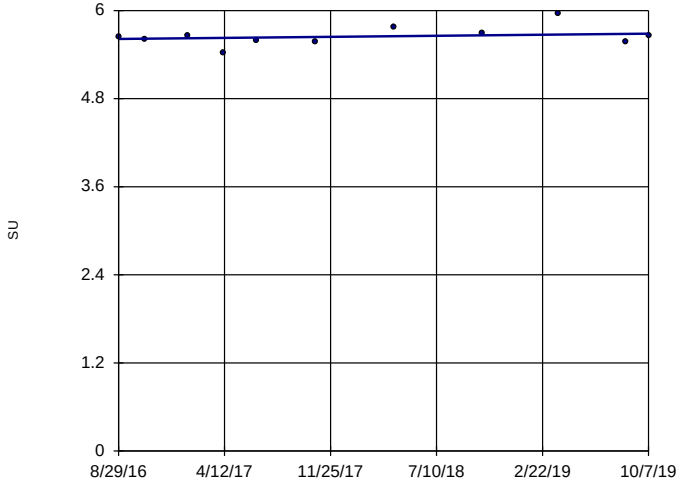
Sen's Slope Estimator

ARGWA-20 (bg)



n = 11

Slope = 0.02346 units per year.

Mann-Kendall statistic = 8
critical = 31

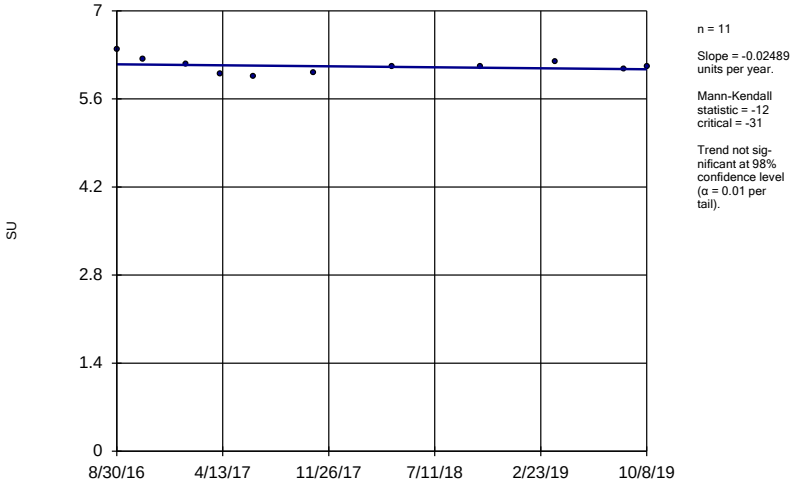
Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: pH Analysis Run 2/11/2020 8:17 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

Sen's Slope Estimator

ARGWC-21



n = 11

Slope = -0.02489 units per year.

Mann-Kendall statistic = -12
critical = -31

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: pH Analysis Run 2/11/2020 8:17 PM View: Time Series
Plant Arkwright Client: Southern Company Data: Arkwright No 2

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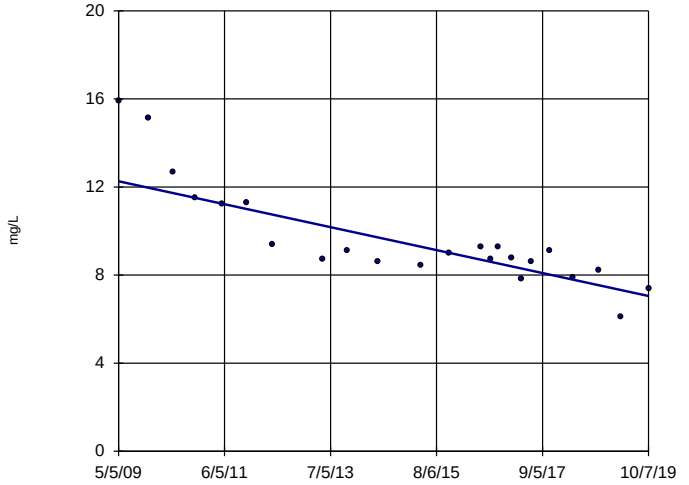
Sen's Slope Estimator

ARGWA-19 (bg)



n = 23

Slope = -0.4996 units per year.

Mann-Kendall statistic = -180
critical = -89

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: Sulfate Analysis Run 2/11/2020 8:17 PM View: Time Series
Plant Arkwright Client: Southern Company Data: Arkwright No 2

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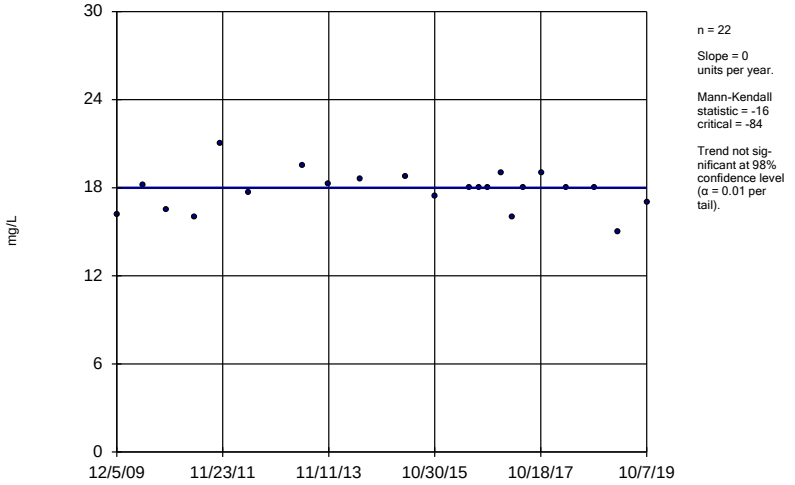
Sen's Slope Estimator

ARGWA-20 (bg)



n = 22

Slope = 0 units per year.

Mann-Kendall statistic = -16
critical = -84

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Sulfate Analysis Run 2/11/2020 8:17 PM View: Time Series
Plant Arkwright Client: Southern Company Data: Arkwright No 2

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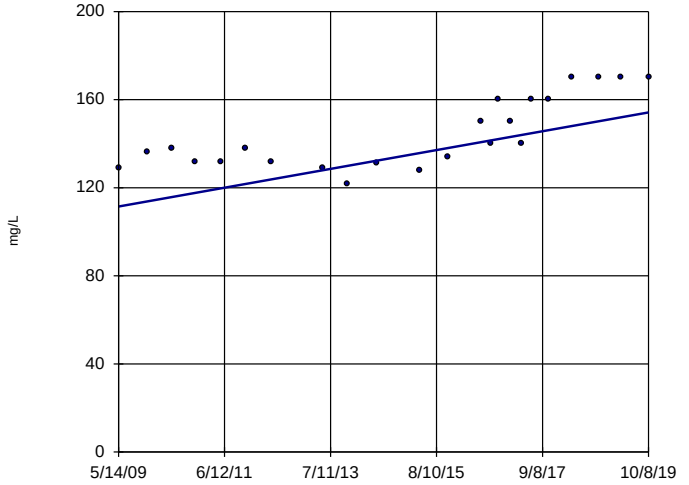
Sen's Slope Estimator

ARGWC-21



n = 23

Slope = 4.099 units per year.

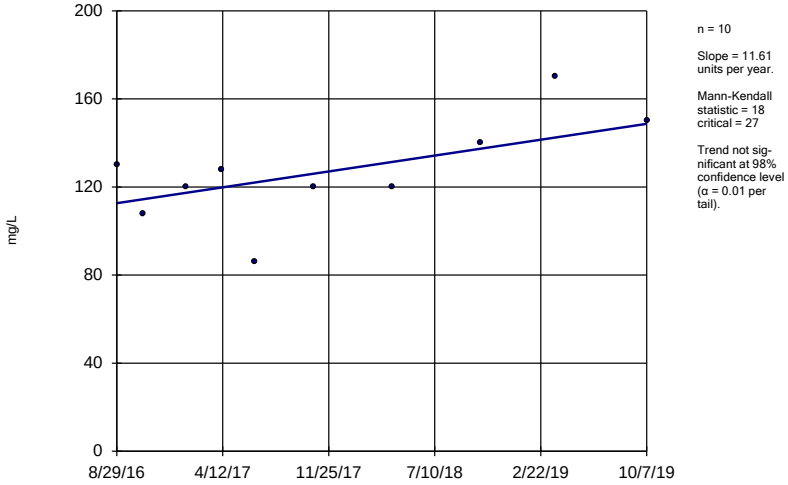
Mann-Kendall statistic = 151
critical = 89

Increasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: Sulfate Analysis Run 2/11/2020 8:17 PM View: Time Series
Plant Arkwright Client: Southern Company Data: Arkwright No 2

Sen's Slope Estimator

ARGWA-19 (bg)



n = 10

Slope = 11.61 units per year.

Mann-Kendall statistic = 18
critical = 27

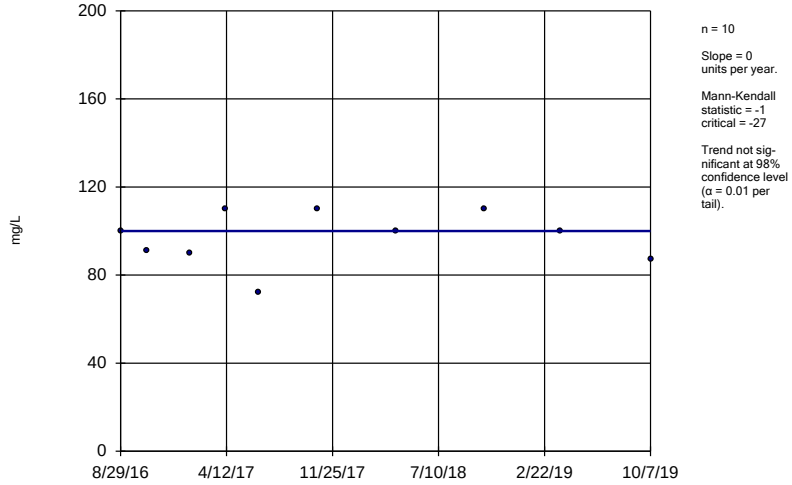
Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Total Dissolved Solids Analysis Run 2/11/2020 8:17 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

Sen's Slope Estimator

ARGWA-20 (bg)



n = 10

Slope = 0 units per year.

Mann-Kendall statistic = -1
critical = -27

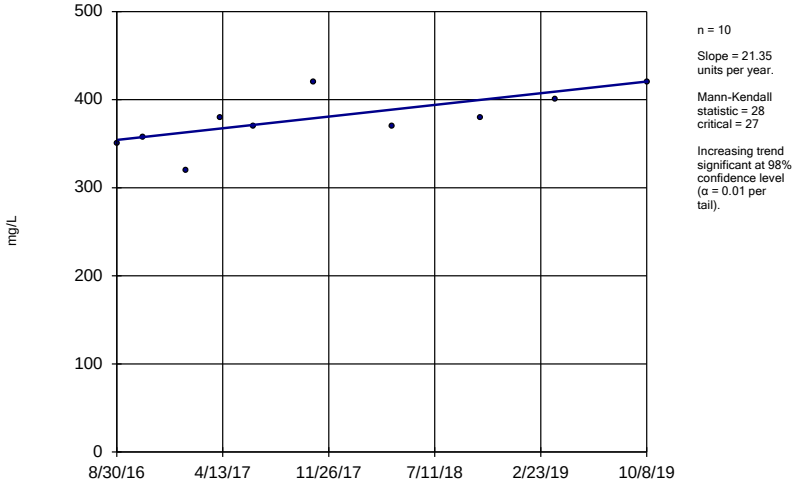
Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Total Dissolved Solids Analysis Run 2/11/2020 8:17 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

Sen's Slope Estimator

ARGWC-21



n = 10

Slope = 21.35 units per year.

Mann-Kendall statistic = 28
critical = 27

Increasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: Total Dissolved Solids Analysis Run 2/11/2020 8:17 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

Sen's Slope Estimator

Constituent: Boron, Calcium Analysis Run 2/11/2020 8:18 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

	ARGWA-19 (bg)	ARGWA-20 (bg)	ARGWC-21	ARGWA-19 (bg)
8/29/2016	0.024 (J)	<0.05		11
8/30/2016			0.57	
10/24/2016	0.0339 (J)	0.0194 (J)		11.5
10/26/2016			0.502	
1/25/2017	0.048 (J)	0.026 (J)	0.56	13
4/10/2017	0.022 (J)	<0.05	0.54	11
6/19/2017	<0.05		0.54	12
6/20/2017		0.032 (J)		
10/24/2017	0.021 (J)	0.054	0.57	12
4/9/2018		0.06		
4/10/2018	0.022 (J)		0.61	12
10/16/2018	<0.05	0.036 (J)	0.59	14
3/26/2019	<0.05			15
3/27/2019		0.046 (J)	0.65	
10/7/2019	<0.08	<0.08		14
10/8/2019			0.58	

Sen's Slope Estimator

Constituent: Calcium, pH Analysis Run 2/11/2020 8:18 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

	ARGWA-20 (bg)	ARGWC-21	ARGWA-19 (bg)	ARGWA-20 (bg)
8/29/2016	8.3			5.64
8/30/2016		46		
10/24/2016	7.66		5.81	5.6
10/26/2016		44.3		
1/25/2017	9.4	50	5.91	5.65
4/10/2017	8.6	52	5.74	5.42
6/19/2017		55	5.54	
6/20/2017	9.4			5.59
10/24/2017	9.9	56	5.82	5.58
4/9/2018	9.9			5.78
4/10/2018		51	5.92	
10/16/2018	9.8	57	5.94	5.69
3/26/2019			5.85	
3/27/2019	9.2	58		5.96
8/20/2019			5.9	5.57
10/7/2019	8.9		5.89	5.65
10/8/2019		60		

Sen's Slope Estimator

Constituent: pH, Sulfate Analysis Run 2/11/2020 8:18 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

	ARGWC-21	ARGWA-19 (bg)	ARGWA-20 (bg)	ARGWC-21
5/5/2009		15.9		
5/14/2009				129
12/5/2009		15.1	16.2	136
6/1/2010		12.7	18.2	
6/2/2010				138
11/11/2010		11.5	16.5	131.49
5/17/2011		11.2	16	132
11/8/2011		11.3	21	138
5/16/2012		9.38	17.7	132
5/14/2013		8.74	19.5	129
11/5/2013		9.12	18.3	122
6/9/2014		8.61	18.6	131
4/14/2015		8.45	18.8	128
10/29/2015				134
11/4/2015		9.01	17.4	
6/22/2016		9.3	18	
6/23/2016				150
8/29/2016		8.7	18	
8/30/2016	6.38			140
10/24/2016		9.3	18	
10/26/2016	6.23			160
1/25/2017	6.15	8.8	19	150
4/10/2017	5.99	7.8	16	140
6/19/2017	5.95	8.6		160
6/20/2017			18	
10/24/2017	6.02	9.1	19	160
4/9/2018			18	
4/10/2018	6.12	7.9		170
10/16/2018	6.12	8.2	18	170
3/26/2019		6.1		
3/27/2019	6.2		15	170
8/20/2019	6.08			
10/7/2019		7.4	17	
10/8/2019	6.11			170

Sen's Slope Estimator

Constituent: Total Dissolved Solids Analysis Run 2/11/2020 8:18 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

	ARGWA-19 (bg)	ARGWA-20 (bg)	ARGWC-21
8/29/2016	130	100	
8/30/2016			350
10/24/2016	108	91	
10/26/2016			357
1/25/2017	120	90	320
4/10/2017	128 (D)	110	380
6/19/2017	86		370
6/20/2017		72	
10/24/2017	120	110	420
4/9/2018		100	
4/10/2018	120		370
10/16/2018	140	110	380
3/26/2019	170		
3/27/2019		100	400
10/7/2019	150	87	
10/8/2019			420

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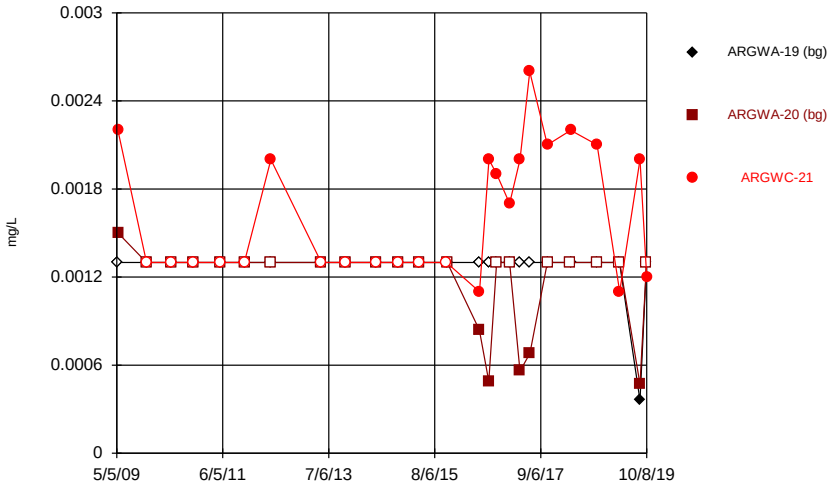
Time Series



Constituent: Arsenic Analysis Run 1/8/2020 1:56 PM View: Time Series
Plant Arkwright Client: Southern Company Data: Arkwright No 2

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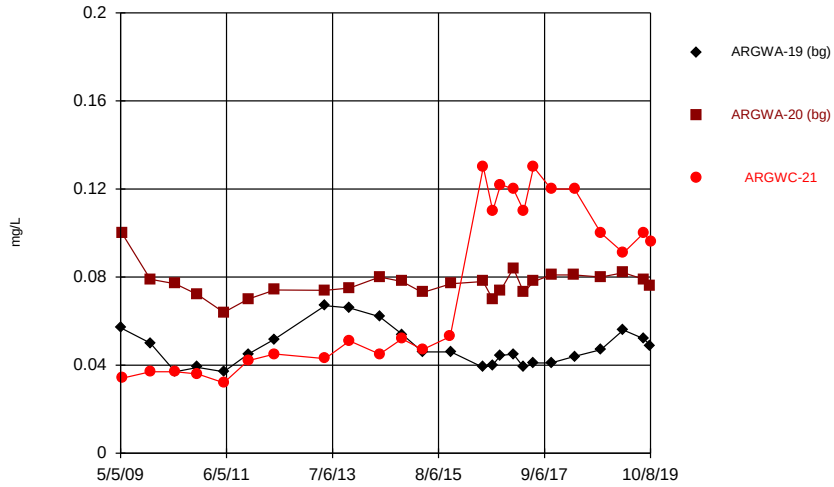
Time Series



Constituent: Barium Analysis Run 1/8/2020 1:56 PM View: Time Series
Plant Arkwright Client: Southern Company Data: Arkwright No 2

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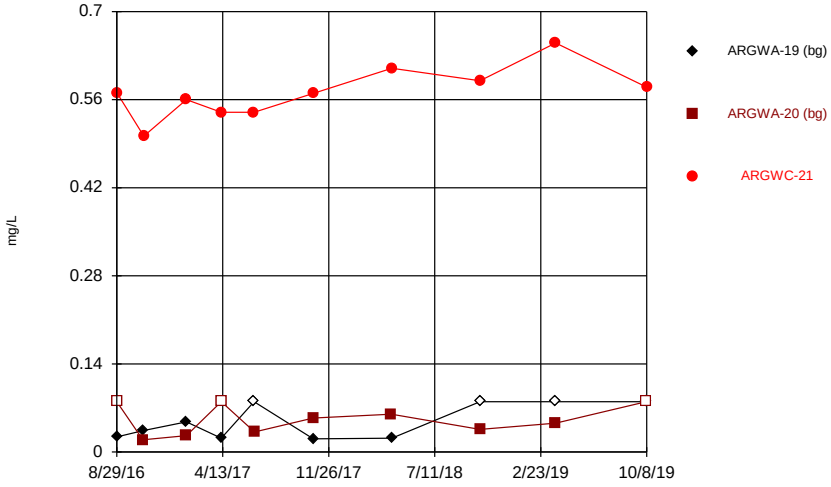
Time Series



Constituent: Boron Analysis Run 1/8/2020 1:56 PM View: Time Series
Plant Arkwright Client: Southern Company Data: Arkwright No 2

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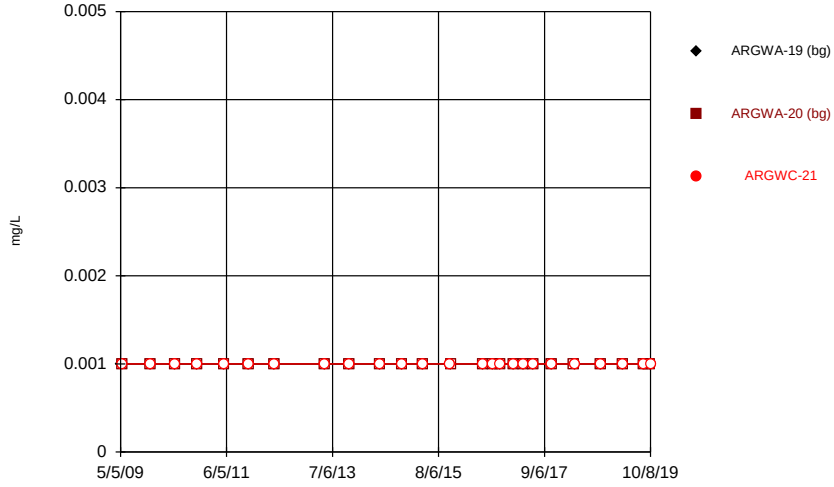
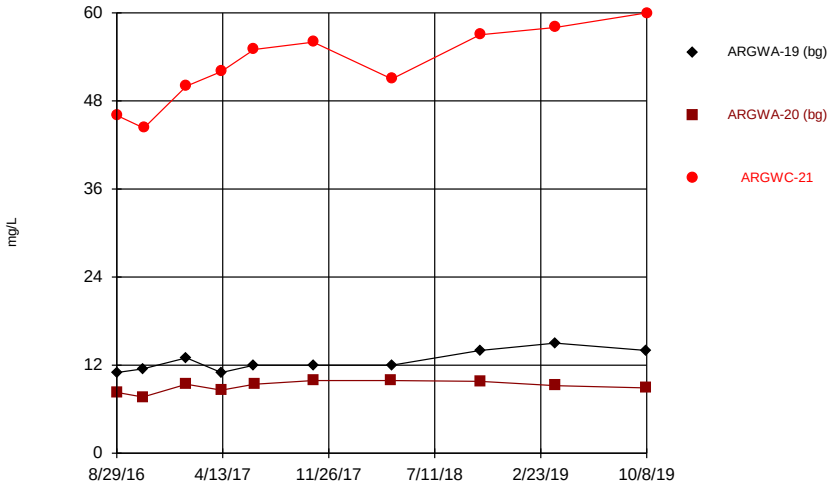
Hollow symbols indicate censored values.

Time Series



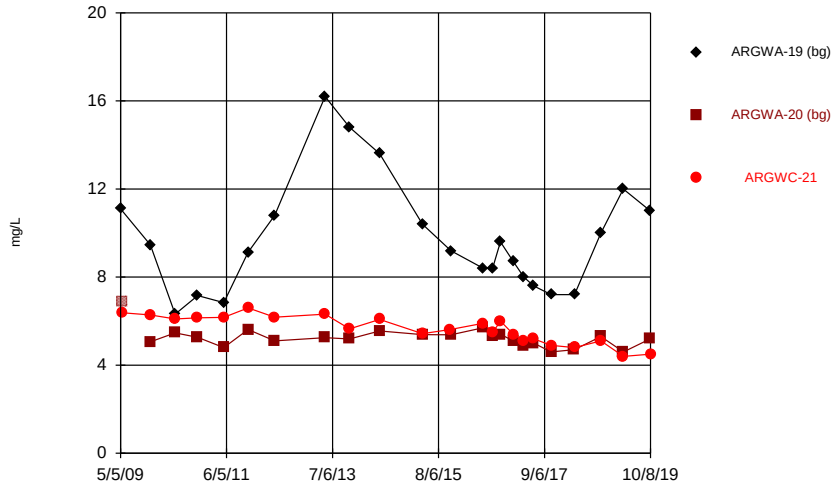
Constituent: Cadmium Analysis Run 1/8/2020 1:56 PM View: Time Series
Plant Arkwright Client: Southern Company Data: Arkwright No 2

Time Series



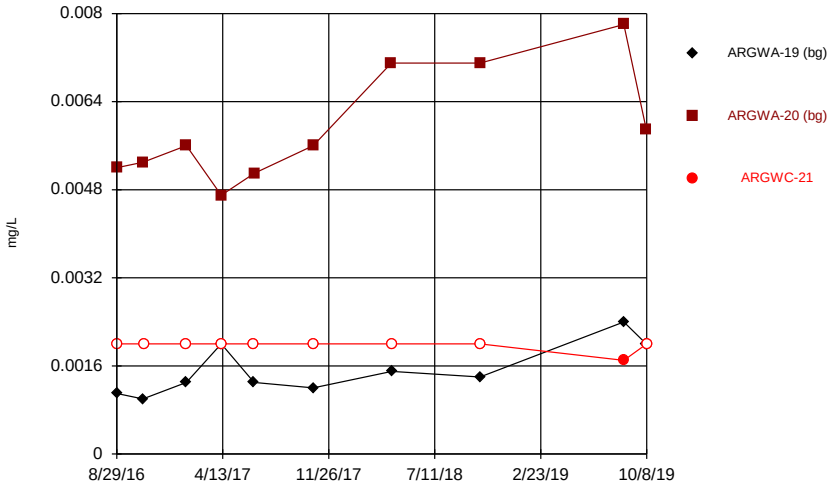
Constituent: Calcium Analysis Run 1/8/2020 1:56 PM View: Time Series
Plant Arkwright Client: Southern Company Data: Arkwright No 2

Time Series



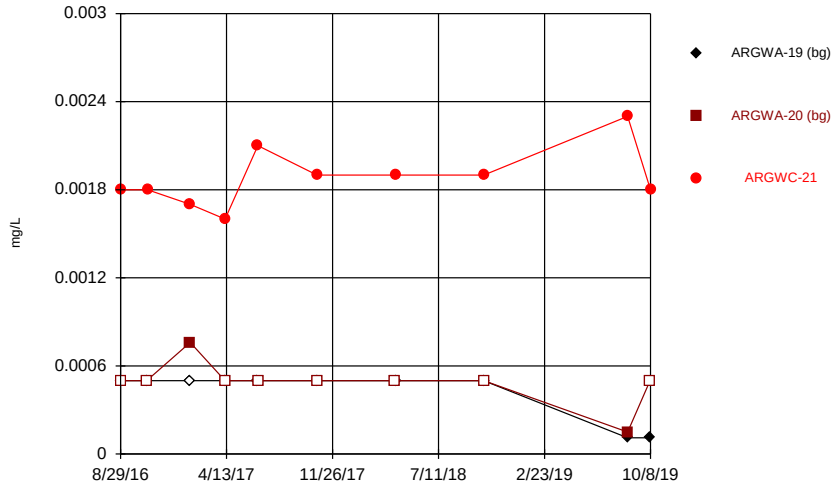
Constituent: Chloride Analysis Run 1/8/2020 1:56 PM View: Time Series
Plant Arkwright Client: Southern Company Data: Arkwright No 2

Time Series



Constituent: Chromium Analysis Run 1/8/2020 1:56 PM View: Time Series
Plant Arkwright Client: Southern Company Data: Arkwright No 2

Time Series



Constituent: Cobalt Analysis Run 1/8/2020 1:56 PM View: Time Series
Plant Arkwright Client: Southern Company Data: Arkwright No 2

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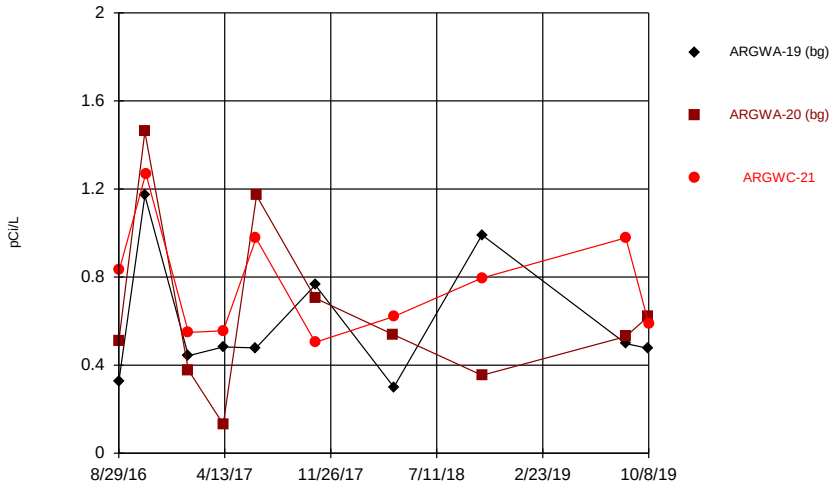
Time Series



Constituent: Combined Radium 226 + 228 Analysis Run 1/8/2020 1:56 PM View: Time Series
Plant Arkwright Client: Southern Company Data: Arkwright No 2

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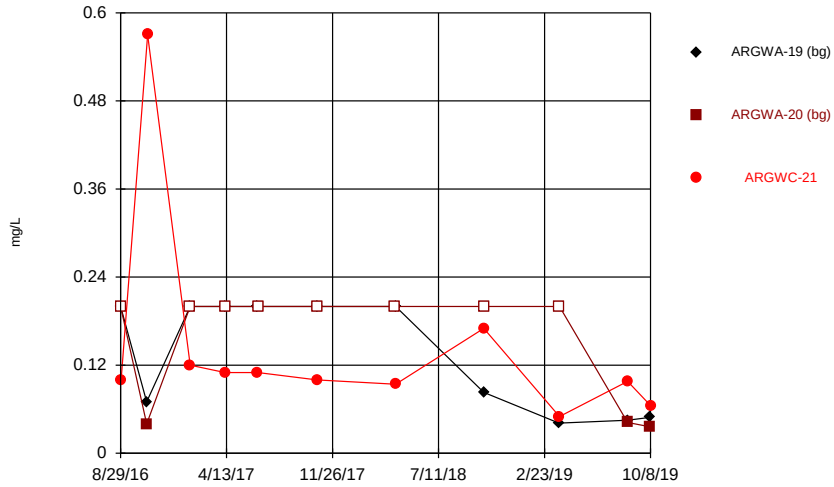
Time Series



Constituent: Fluoride Analysis Run 1/8/2020 1:56 PM View: Time Series
Plant Arkwright Client: Southern Company Data: Arkwright No 2

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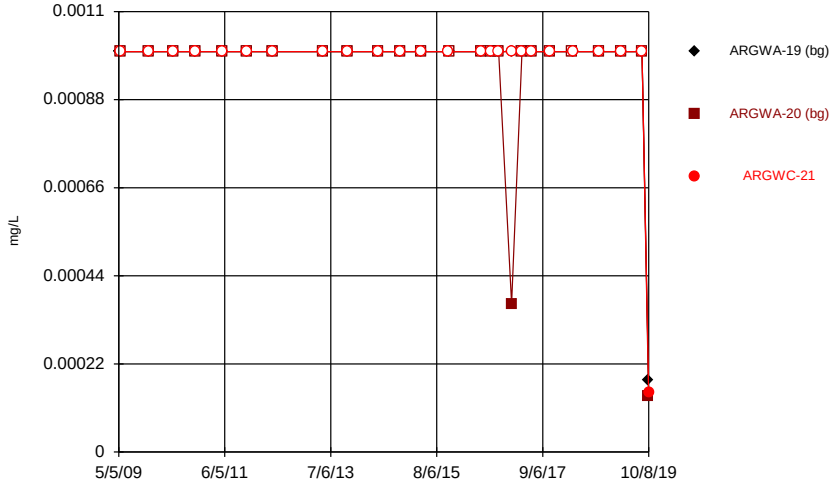
Time Series



Constituent: Lead Analysis Run 1/8/2020 1:56 PM View: Time Series
Plant Arkwright Client: Southern Company Data: Arkwright No 2

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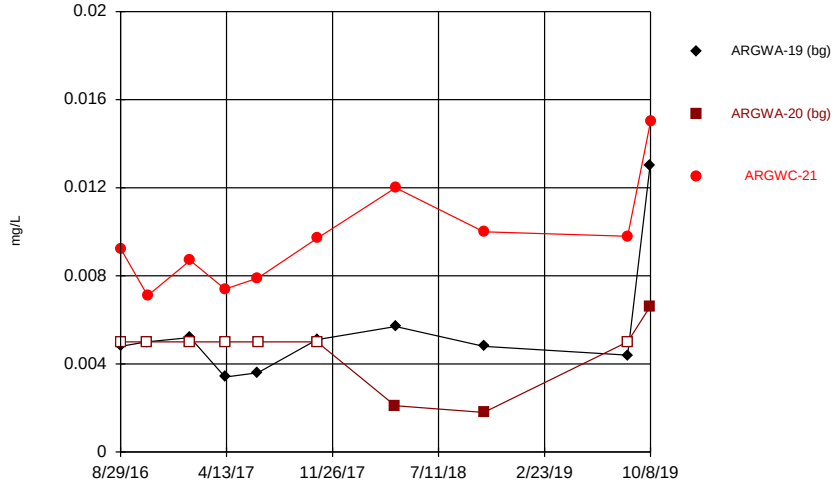
Time Series



Constituent: Lithium Analysis Run 1/8/2020 1:56 PM View: Time Series
Plant Arkwright Client: Southern Company Data: Arkwright No 2

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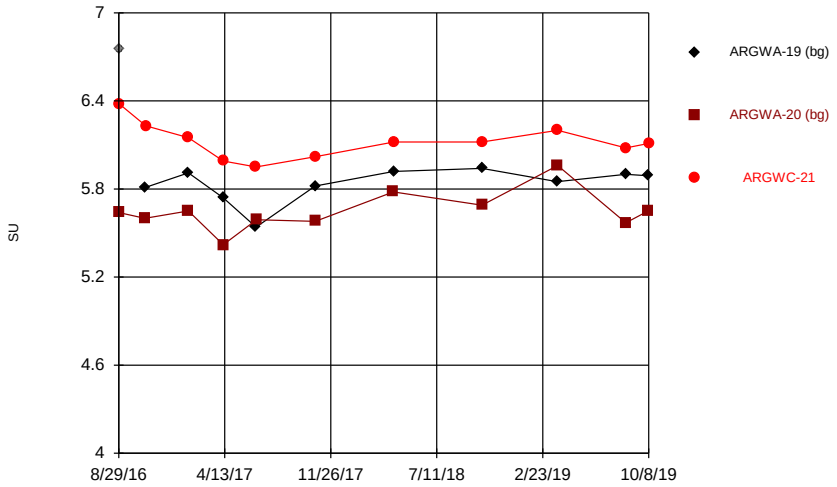
Time Series



Constituent: pH Analysis Run 1/8/2020 1:56 PM View: Time Series
Plant Arkwright Client: Southern Company Data: Arkwright No 2

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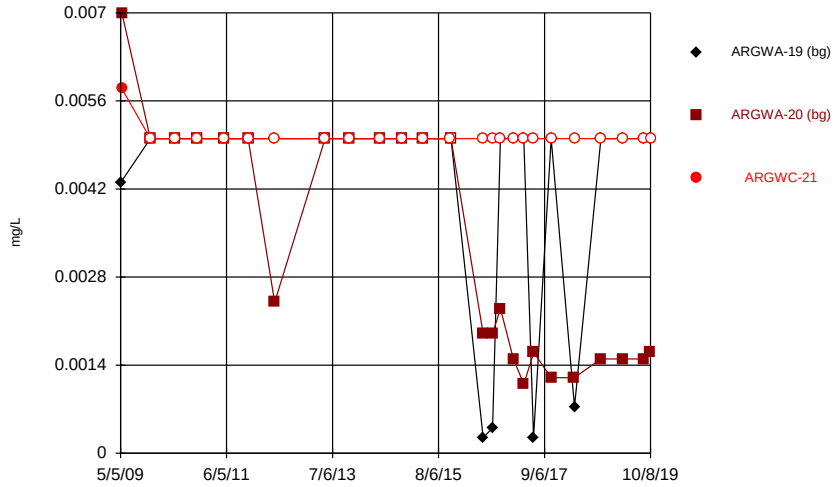
Hollow symbols indicate censored values.

Time Series



Constituent: Selenium Analysis Run 1/8/2020 1:56 PM View: Time Series
Plant Arkwright Client: Southern Company Data: Arkwright No 2

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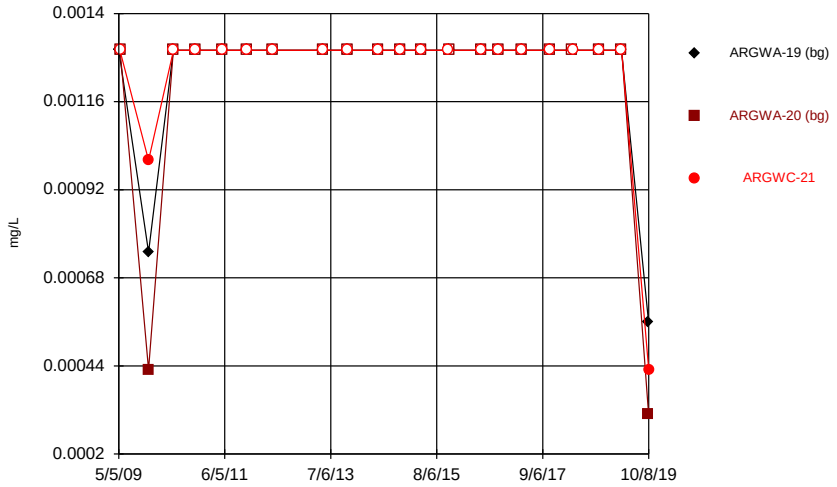
Hollow symbols indicate censored values.

Time Series



Constituent: Silver Analysis Run 1/8/2020 1:56 PM View: Time Series
Plant Arkwright Client: Southern Company Data: Arkwright No 2

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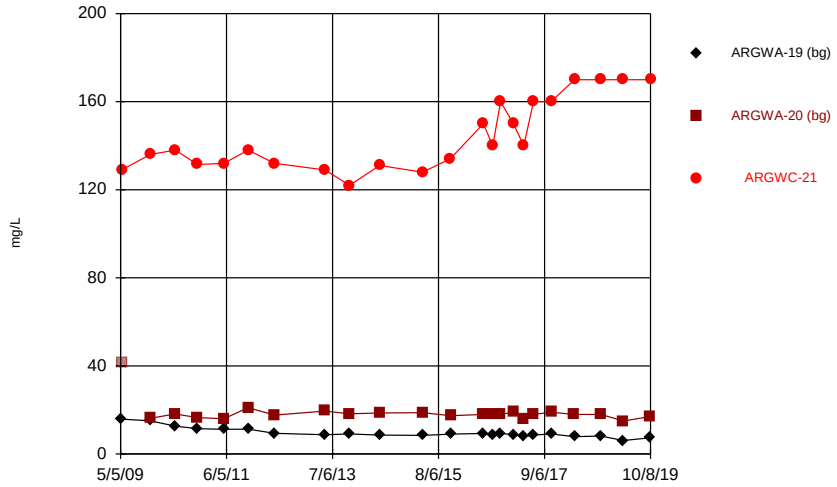
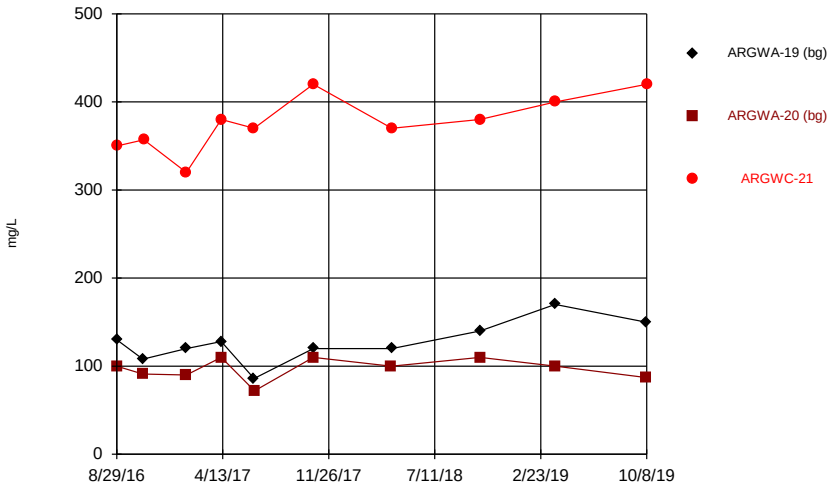
Time Series



Constituent: Sulfate Analysis Run 1/8/2020 1:56 PM View: Time Series
Plant Arkwright Client: Southern Company Data: Arkwright No 2

Time Series



Constituent: Total Dissolved Solids Analysis Run 1/8/2020 1:56 PM View: Time Series

Plant Arkwright Client: Southern Company Data: Arkwright No 2

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