

# 2019 Semiannual Groundwater Monitoring and Corrective Action Report

## PLANT McMANUS Inactive Ash Pond AP-1

Prepared for:  
GEORGIA POWER COMPANY  
Atlanta, Georgia



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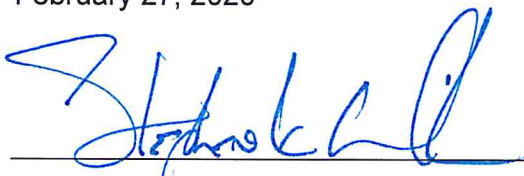
February 27, 2020

# Georgia Power Company

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Inactive Ash Pond AP-1

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Stephen K. Wilson, P.G.  
*Principal*



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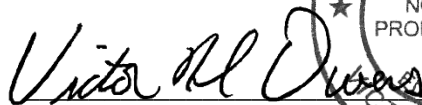
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**CERTIFICATION STATEMENT**

This 2019 Semiannual Groundwater Monitoring and Corrective Action Report, Georgia Power Company - Plant McManus- Inactive Ash Pond AP-1 has been prepared in compliance with the United States Environmental Protection Agency coal combustion residual rule [40 Code of Federal Regulations (CFR) 257 Subpart D] and the Georgia Environmental Protection Division Rules for Solid Waste Management 391-3-4-.10 by a qualified groundwater scientist or engineer with Resolute Environmental & Water Resources Consulting, LLC (Resolute).

**RESOLUTE ENVIRONMENTAL & WATER RESOURCES CONSULTING, LLC**

Signature:



Victor Owens, P.E.



Date:

February 24, 2020

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## 1.0 INTRODUCTION

In accordance with the United States Environmental Protection Agency (USEPA) coal combustion residual (CCR) rule (40 Code of Federal Regulations [CFR] 257 Subpart D; published in 80 FR 21302-21501, April 17, 2015) and the Georgia Environmental Protection Division (EPD) Rules for Solid Waste Management 391-3-4-.10, this *2019 Semiannual Groundwater Monitoring and Corrective Action Report* has been prepared to document groundwater monitoring activities conducted at Georgia Power Company's (GPC's) Plant McManus Inactive Ash Pond AP-1 (the Site) and satisfy the requirements of § 257.90(e). To specify groundwater monitoring requirements, Georgia EPD rule 391-3-4-.10(6)(a) incorporates by reference the United States Environmental Protection Agency (USEPA) coal combustion residual (CCR) rule (40 Code of Federal Regulations [CFR] 257 Subpart D; published in 80 FR 21302-21501, April 17, 2015). For ease of reference, the USEPA CCR rules are cited within this report.

Groundwater monitoring and reporting for the former AP-1 is performed in accordance with the monitoring requirements of 40 CFR 257.90 through 257.95 of the USEPA CCR rule, and Georgia EPD Rules for Solid Waste Management 391-3-4-.10(6).

The former AP-1 ceased receiving waste prior to the effective date of the USEPA CCR rule promulgated in April 2015. A notification of intent to initiate closure of the inactive CCR ash pond was certified on December 7, 2015 and posted to GPC's website. Therefore, groundwater monitoring and reporting for the former AP-1 are being completed in accordance with the alternate schedule in § 257.100(e)(5) of the revised USEPA CCR rule (August 5, 2016).

This report documents semiannual monitoring activities completed in the second half of 2019 and includes the required report components in accordance with 40 CFR 257.90(e).

### 1.1 SITE LOCATION AND DESCRIPTION

The Site is located at 1 Crispen Island Dr. in Glynn County, Georgia, approximately 5.37 miles northwest of the city of Brunswick. The plant property is bordered by the Turtle River to the west and by Burnett Creek to the north. (Figure 1). The former AP-1 is located on the northeastern portion of the plant property (Figures 1 and 2).

The former AP-1 was an approximately 80-acre ash pond that was built in the late 1950's. Ash sluicing operations at AP-1 commenced in 1959 and ceased in 1972. Closure of AP-1 commenced in 2016. As part of closure, AP-1 was dewatered sufficiently to remove the free liquids, and ash was removed and disposed of in an offsite, permitted landfill.

#### 1.1.1 Regional Geology

The Brunswick area is underlain by three regional aquifer systems which extend to depths exceeding 1,100 feet. The uppermost regional aquifer is the surficial aquifer. In the Brunswick area, this aquifer extends to a depth of approximately 180 feet. Although the surficial aquifer is

defined on a regional scale as extending to approximately 180 feet below ground surface, Clarke and others (1990) acknowledge that localized lower permeability units can create confined or semi-confined conditions within limited areas of the surficial aquifer (ATC Associates Inc., 1997).

Regionally, the surficial aquifer is composed of geologic formations overlying the Hawthorn Formation. These formations include the Satilla, Charlton, and Raysor Formations, as well as undifferentiated Holocene, Pleistocene, Pliocene and late-Miocene deposits. These formations and deposits are comprised of sands, clays, and gravels. Depositionally, these sediments represent marginal to shallow marine beds, that are overlain by marine terrace deposits. Fluvial or residual deposits overlay the terrace deposits (Miller, 1986; Clarke et al, 1990).

The regional surficial aquifer is underlain by approximately 90 feet of lower-permeability portions (Miocene Unit A) of the Hawthorn Formation. This stratum forms the upper confining bed for the Brunswick aquifer system. The Brunswick aquifer system is composed of two confined aquifers (the Upper Brunswick aquifer and the Lower Brunswick aquifer) which are separated and confined above and below by less permeable units of the Hawthorn Formation. The Upper Brunswick aquifer extends from approximately 270 feet to 350 feet below ground surface, and the Lower Brunswick aquifer extends from approximately 400 feet to 470 feet below ground surface (Clarke et al, 1990).

### 1.1.2 Site Geology and Hydrogeology

Based on information collected during subsurface investigations, Plant McManus is underlain by very fine sands and clays from land surface (or beneath a shallow fill layer) to depths ranging from 33 to 43 feet below land surface. Very fine sands are predominant, but discontinuous clay layers of varying thickness were encountered during drilling activities. The clay layers varied from less than one inch to approximately ten feet in thickness. These very fine sands and discontinuous clay layers are interpreted to be the Upper Satilla Formation (ATC Associates, Inc., 1997).

Underlying the Upper Satilla Formation are fine to medium sands with greater silt content, and apparently lower permeability, than the sands of the Upper Satilla. These siltier sands, which were interpreted to be the Lower Satilla Formation, were encountered at depths greater than 35 feet below ground surface during the Site investigation performed in the 1990s (ATC Associates Inc., 1997).

The regional surficial aquifer that contains the Upper and Lower Satilla Formations is underlain by approximately 90 feet of lower-permeability portions (Miocene Unit A) of the Hawthorn Formation. This stratum forms the upper confining bed for the Brunswick aquifer system.

The surficial aquifer underlying the mainland, marsh, and island is composed of the very fine to fine grain sand with discontinuous clay layers of the Upper and Lower Satilla Formation. In the marsh, the groundwater elevation at low tide is below the top of the marsh surface. The upper portion of the aquifer in the marsh has been cut by tidal creeks, which meander through the marsh. In addition to current and historically recent (pre-ash pond construction) tidal channels,

the marsh is also likely to have paleo (pre-historic) tidal channels present throughout the upper portion of the aquifer in the marsh area, which may provide zones of higher hydraulic conductivity. Vertically, the Satilla formation fines downward to a silty fine sand of the Lower Satilla Formation. The aquifer is generally unconfined, with localized clay layers. Groundwater flowing within the surficial aquifer is separated from deeper aquifers by approximately 90 feet of lower-permeability portions of the Hawthorn Formation (Miocene Unit A) that form the upper confining bed for the Brunswick aquifer system.

Groundwater flows from two directions toward the former AP-1. One groundwater flow component originates on the mainland, northeast of the facility, and flows southwest, while the other flow component originates on Crispen Island and flows north and northeast (Figures 3 and 4). Groundwater elevations in the monitoring wells on the mainland and on the island have consistently exhibited higher groundwater elevations than the monitoring wells and piezometers installed along the dikes. The potentiometric surface of the surficial aquifer and the resultant groundwater flow direction in the vicinity of the former AP-1 is a reflection of the topography of the mainland, Crispen Island, and the tidal marsh surrounding the area.

## 1.2 GROUNDWATER MONITORING SYSTEM

Pursuant to § 257.91, GPC installed a groundwater monitoring system within the uppermost aquifer around former AP-1. The monitoring system is designed to monitor groundwater passing the waste boundary of the former AP-1 within the uppermost aquifer. Wells were located to serve as piezometers, upgradient monitoring points, or downgradient monitoring points based on groundwater flow direction (Table 1).



## 2.0 GROUNDWATER MONITORING ACTIVITIES

The following describes monitoring-related activities performed during the second half of 2019 and discusses any change in status of the monitoring program. Based on results of the August 2019 *Annual Groundwater and Corrective Action Monitoring Report*, assessment monitoring was initiated at the Site. Assessment groundwater sampling events were conducted for the former AP-1 in August and October 2019. During the initial assessment monitoring event in August 2019, groundwater samples were collected and analyzed for the full suite of Appendix IV constituents to meet the requirements of § 257.95(b). During the subsequent semi-annual assessment monitoring event in October 2019, groundwater samples were collected for the Appendix III constituents and the Appendix IV constituents detected during the August 2019 event.

Laboratory analytical data and field sampling data from the sampling activities conducted in the second half of 2019 are presented in Appendix A. Groundwater sampling was performed in accordance with § 257.93. Samples were collected from 13 monitoring wells in the monitoring system shown on Figure 2. Pursuant to § 257.90(e)(3), Table 2 presents a summary of groundwater sampling events completed at the former AP-1.

### 2.1 MONITORING WELL INSTALLATION, MAINTENANCE, AND ABANDONMENTS

In summary, monitoring activities in 2019 included the following:

- Visual inspection of well conditions prior to sampling, recording Site conditions, and performing exterior maintenance to perform sampling under safe and clean conditions;
- Installation of seven piezometers to characterize Site hydrogeology and groundwater flow conditions; and
- Abandonment of piezometer MCM-09 to facilitate closure activities.

The locations of the additional seven piezometers are shown on Figure 2, with relevant piezometer construction details provided in Table 1. Boring logs and well construction forms for the new piezometers are included in Appendix B.

### 2.2 ASSESSMENT MONITORING

Appendix III constituents exhibited statistically significant increases (SSIs) over background during the first detection monitoring event conducted in March 2019. Analytical results and statistical evaluation of those results were provided in the 2019 *Annual Groundwater and Corrective Action Monitoring Report* (Resolute, 2019). Pursuant to § 257.95(b), the 13 monitoring wells of the certified compliance monitoring network (Figure 2) were sampled for the full suite of Appendix IV constituents in August 2019 as the initial assessment monitoring event.

Following receipt of the initial Appendix IV sample results, the October 2019 semi-annual assessment monitoring event was conducted. In October 2019, the groundwater samples were analyzed for Appendix III constituents and the following Appendix IV constituents that were

detected during the August 2019 event: antimony, arsenic, barium, beryllium, chromium, cobalt, lead, lithium, molybdenum, combined radium 226/228, selenium, and thallium. In addition, resampling of select wells was performed in November. The sequence of monitoring events conducted at the former AP-1 in 2019 is summarized in Table 2. Details of these events and analytical results are discussed in Section 3, while the statistical results are discussed in Section 4.

### 2.3 ADDITIONAL WELL INSTALLATION AND GROUNDWATER SAMPLING

To further characterize Site hydrogeology and groundwater flow conditions, piezometers MCM-18, MCM-19, MCM-20, and PZ-09 through PZ-12 were installed in October and November 2019. The number, spacing, and depths of the seven new piezometers were selected based on the characterization of the Site-specific hydrogeologic conditions and designed to monitor the uppermost water-bearing zone. Boring logs, well construction forms, and well development forms are provided in Appendix B.

Groundwater samples were collected from the new piezometers MCM-18, MCM-19, and MCM-20 during November and December 2019. The field logs and laboratory reports associated with the November and December 2019 sampling events are included in Appendix A.

### 3.0 SAMPLE METHODOLOGY & ANALYSES

The following sections describe the methods used to conduct groundwater monitoring and the groundwater sampling results that were obtained activities at the former AP-1 during August 2019 through December 2019.

#### 3.1 GROUNDWATER ELEVATION MEASUREMENT

Prior to each sampling event, groundwater levels were recorded from piezometers and monitoring wells in the network at the former AP-1. Groundwater elevations calculated during the August and October 2019 monitoring events are summarized in Table 3. Groundwater elevation data were used to develop a potentiometric surface elevation contour map for each event (Figures 3 and 4). Groundwater flow at the Site is discussed in Section 1.1.

#### 3.2 GROUNDWATER GRADIENT AND HORIZONTAL FLOW VELOCITY

The horizontal groundwater flow velocity at the former AP-1 was calculated using a derivation of Darcy's Law. Specifically,

$$V = \frac{K * i}{\eta_e}$$

Where:

$$V = \text{Groundwater flow velocity } \left( \frac{\text{feet}}{\text{day}} \right)$$

$$K = \text{Average Hydraulic Conductivity } \left( \frac{\text{feet}}{\text{day}} \right)$$

$$i = \text{Horizontal hydraulic gradient } \left( \frac{\text{feet}}{\text{foot}} \right)$$

$$\eta_e = \text{Effective porosity}$$

Horizontal hydraulic gradients were calculated for the island and mainland flows using observed gradients for both the August 26, 2019 and October 16, 2019 low tide potentiometric surface maps. In August 2019, the horizontal gradients ranged from approximately 0.005 feet per foot (ft/ft) between MCM-08 and MCM-07 (flow from the island to the former AP-1) to approximately 0.009 ft/ft between MCM-16 and MCM-02 (flow from the mainland to the former AP-1). In October 2019, the horizontal gradients ranged from approximately 0.004 ft/ft between MCM-08 and MCM-07 to approximately 0.008 ft/ft between MCM-16 and MCM-02.

Horizontal groundwater flow velocities were calculated using representative gradients from well pairs described above for the two 2019 events, average hydraulic conductivity, and effective

porosity around the former AP-1 of 3.58 ft/day and 0.35, respectively. These calculations are presented on Table 4. Based on these factors, the calculated horizontal groundwater flow velocities ranged from approximately 0.05 to 0.10 ft/day in August 2019 and 0.04 to 0.08 ft/day in October 2019. The average groundwater flow velocity at the former AP-1 for the two 2019 events was calculated as 0.066 ft/day, or 24 ft/year.

### 3.3 GROUNDWATER SAMPLING

Groundwater samples were collected from the compliance monitoring network and select piezometers using low-flow sampling procedures in accordance with § 257.93(a). Purging and sampling was performed using either a peristaltic pump with the intake tubing lowered to the midpoint of the well screen (or as appropriate determined by the water level) or a QED dedicated bladder pump. QED dedicated pumps are utilized in monitoring wells MCM-01, MCM-05, MCM-06, MCM-07, MCM-12, MCM-14, MCM-16, and MCM-17. Non-disposable equipment was decontaminated before use and between well locations.

A SmarTroll (In-Situ field instrument) was used to monitor and record field water quality parameters (pH, conductivity, dissolved oxygen (DO), temperature, and oxidation reduction potential [ORP]) during well purging to verify stabilization prior to sampling. Turbidity was monitored using a LaMotte 2020we (or similar) 1970-USEPA and ISO Compliant Model turbidity meter.

Groundwater samples were collected when the following stabilization criteria were met:

- $\pm 0.1$  standard units for pH
- $\pm 10\%$  for specific conductance
- $\pm 10\%$  for DO > 0.5 mg/L. No criterion applies if DO < 0.5 mg/L, record only
- Turbidity measurements less than or equal to 10 nephelometric turbidity units (NTU)

Once stabilization was achieved, unfiltered samples were collected in appropriately preserved laboratory-supplied containers, placed in ice-packed coolers, and submitted to Pace Analytical Services, LLC (Pace) following chain-of-custody protocol. The field sampling forms generated during the monitoring events conducted during August through December 2019 are included in Appendix A.

### 3.4 LABORATORY ANALYSES

Laboratory analyses were performed by Pace, which is accredited by National Environmental Laboratory Accreditation Program (NELAP) and maintains a NELAP certification for all Appendix III and Appendix IV constituents analyzed for this project.

The groundwater analytical results from the Appendix IV initial assessment monitoring event conducted in August 2019, the semiannual assessment monitoring event conducted in October 2019, and resample event conducted in November 2019 are summarized in Table 5. The Pace

laboratory analytical reports are provided in Appendix A. The pH field measurements recorded during the sampling events are also provided in Table 5.

### 3.5 QUALITY ASSURANCE AND QUALITY CONTROL

During each sampling event, quality assurance/quality control samples (QA/QC) were collected at a rate of one sample per every 10 detection samples. QA/QC samples included field equipment rinsate blanks (EQBL), field blanks (FBL), and duplicate (DUP) samples. QA/QC sample data were evaluated during data validation (as described below) and are included in Appendix A.

Groundwater quality data in this report were independently validated in accordance with USEPA guidance (USEPA, 2011) and the analytical methods. Data validation generally consisted of reviewing sample integrity, holding times, laboratory method blanks, laboratory control samples, matrix spikes/matrix spike duplicate recoveries and relative percent differences (RPDs), post digestion spikes, laboratory and field duplicate RPDs, field and equipment blanks, and reporting limits. Where appropriate, validation qualifiers and flags are applied to the data using USEPA procedures as guidance (USEPA, 2017). Based on the data validation reports, the data collected during August, October, and November 2019 are acceptable for use in determining the compliance status of the Site. The associated data validation report is provided in Appendix A with the laboratory reports.

## 4.0 STATISTICAL ANALYSIS

The Sanitas groundwater statistical software was used to perform the statistical analyses. Sanitas is a decision-support software package that incorporates the statistical test required of Subtitle C and Subtitle D facilities by USEPA regulations and guidance as recommended in the USEPA document Statistical Analysis of Groundwater Data at RCRA Facilities Unified Guidance (Unified Guidance) (USEPA, 2009). Statistical analyses of Appendix III groundwater monitoring data were performed pursuant to § 257.93 following the PE-certified statistical method for the former AP-1. The statistical method and results are discussed in the following sections and presented in Appendix B.

Pursuant to § 257.95(d)(2) GPC will establish groundwater protection standards for the Appendix IV monitoring constituents and complete statistical analysis of the Appendix IV groundwater monitoring data obtained during the first semi-annual assessment monitoring event within 90 days of obtaining the results. GPC will complete the assessment monitoring and statistical analysis in accordance with § 257.95 and report the results in the Annual Groundwater Monitoring and Corrective Action Report, due August 1, 2020.

### 4.1 STATISTICAL METHOD

The statistical test used to evaluate the groundwater monitoring data was the interwell prediction limit (PL) method for Appendix III constituents (boron, calcium, chloride, fluoride, pH, sulfate, and total dissolved solids [TDS]) combined with the option of a 1-of-2 verification resampling strategy. Interwell prediction limits, constructed from all available pooled upgradient well data were used to evaluate the most recent compliance sample from each downgradient well reported during the October/November 2019 sample event.

If data from a sampling event initially exceed the PL, the resampling strategy may be used to verify the result. In 1-of-2 resampling, one independent resample may be collected and evaluated within 90 days to determine whether the initial exceedance is verified. If the resample exceeds the PL, the initial exceedance is verified and an SSI is determined. When the resample result does not verify the initial result, there is no SSI. If resampling is not performed, the initial exceedance is a confirmed exceedance.

The following guidance is also applicable to the statistical analysis method:

- Statistical analyses are not performed on analytes containing 100% non-detects (USEPA, 2009).
- When data contain less than or equal to 15% non-detects in background, simple substitution of one-half the reporting limit is utilized in the statistical analysis. The reporting limit utilized for non-detects is the practical quantitation limit (PQL) as reported by the laboratory.

- When data contain between 15-50% non-detects, the Kaplan-Meier non-detect adjustment is applied to the background data. This technique adjusts the mean and standard deviation of the historical concentrations to account for concentrations below the reporting limit.
- Nonparametric PLs are used on data containing greater than 50% non-detects.

The Sen's Slope/Mann Kendall trend test was used to determine whether there was a statistically significant trend over the entire period of record for the exceedances noted above. Upgradient wells were included in the trend testing to determine whether similar patterns exist upgradient of the facility. Results are discussed in Section 4.2 and presented in Appendix C.

#### 4.2 STATISTICAL ANALYSES RESULTS – APPENDIX III

Data from the monitoring event conducted in October 2019 at the former AP-1 were statistically analyzed in accordance with the PE-certified statistical method. The statistical analysis and comparison to PLs are included as Appendix B.

Verification resampling was performed in November 2019, and some initial SSIs observed in the October 2019 sampling results were not confirmed. Based on the statistical results presented in Appendix B, the following summarizes confirmed SSIs:

- Boron: MCM-05, MCM-06, MCM-07, MCM-12, MCM-14, MCM-17
- Calcium: MCM-05, MCM-06, MCM-07, MCM-14, MCM-17
- Chloride: MCM-06, MCM-07, MCM-14, MCM-17
- Fluoride: MCM-12
- pH: MCM-05, MCM-06, MCM-07, MCM-12, MCM-14, MCM-17
- Sulfate: MCM-06, MCM-07, MCM-14
- TDS: MCM-06, MCM-07, MCM-14, MCM-17

#### 4.3 STATISTICAL ANALYSES - APPENDIX IV

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 Annual Groundwater Monitoring and Corrective Action Report, due August 1, 2020.

## 5.0 MONITORING PROGRAM STATUS

The Plant McManus former AP-1 is in assessment monitoring. SSIs of Appendix III constituents were identified in the October 2019 semiannual event. Pursuant to § 257.94(e)(1), GPC will continue assessment monitoring in accordance with § 257.95.



## 6.0 CONCLUSIONS & FUTURE ACTIONS

This 2019 Semiannual Groundwater Monitoring and Corrective Action Report for GPC's Plant McManus Inactive Ash Pond AP-1 was prepared to fulfill the requirements of USEPA's CCR Rule and Georgia EPD rule 391-3-4-.10(6)(c). Statistical evaluations of the groundwater monitoring data for the former AP-1 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 analyses according to the regulations. The next semiannual sampling event is planned for March 2020.

## 7.0 REFERENCES

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# TABLES

**Table 1  
Monitoring Well Network Summary  
Plant McManus  
Brunswick, GA**

Well ID	Hydraulic Location	Installation Date	Northing <sup>1</sup> (ft)	Easting <sup>1</sup> (ft)	Top of Casing Elevation <sup>2</sup> (ft NAVD 88)	Total Depth (ft BTOC)	Top of Screen Elevation (ft NAVD 88)	Bottom of Screen Elevation (ft NAVD 88)
<b>Compliance Monitoring Network</b>								
MCM-01	Upgradient	7/7/2016	443727.05	852732.97	8.76	27.32	-8.56	-18.56
MCM-02	Upgradient	7/6/2016	444497.35	852663.20	10.58	27.35	-6.77	-16.77
MCM-04	Downgradient	6/30/2016	444803.87	851694.66	12.47	28.57	-6.10	-16.10
MCM-05	Downgradient	7/9/2016	444716.62	851309.90	10.09	28.05	-7.96	-17.96
MCM-06	Downgradient	7/8/2016	444407.04	850782.25	10.17	27.20	-7.03	-17.03
MCM-07	Downgradient	7/8/2016	444059.47	850196.00	10.22	23.75	-3.53	-13.53
MCM-08	Upgradient	7/11/2016	443759.17	849718.14	9.41	28.29	-8.88	-18.88
MCM-11	Upgradient	7/12/2016	442430.10	851071.92	10.37	24.00	-3.63	-13.63
MCM-12	Downgradient	7/12/2016	442820.34	851313.25	12.03	29.00	-6.97	-16.97
MCM-14	Downgradient	7/9/2016	443359.49	852317.14	11.66	28.11	-6.45	-16.45
MCM-15	Upgradient	6/30/2016	444824.59	851948.43	12.87	26.60	-3.73	-13.73
MCM-16	Upgradient	7/6/2019	444550.36	852717.13	15.81	28.39	-2.58	-12.58
MCM-17	Downgradient	9/29/2016	443075.33	851899.07	11.67	27.44	-5.77	-15.77
<b>Piezometers</b>								
MCM-03	Water Level	7/6/2016	444415.61	851983.84	10.00	27.70	-7.70	-17.70
MCM-09	Water Level	7/10/2019	443252.16	850147.75	9.77	28.46	-8.69	-18.69
MCM-10	Water Level	7/11/2016	442790.76	850452.79	11.77	23.96	-2.19	-12.19
MCM-13	Water Level	7/9/2016	443029.45	851825.46	12.67	27.46	-4.79	-14.79
MCM-18	Upgradient	10/30/2019	442067.07	851698.41	9.00	27.86	-8.86	-18.86
MCM-19	Upgradient	10/30/2019	441157.82	852338.86	8.71	28.32	-9.61	-19.61
MCM-20	Upgradient	10/30/2019	440944.40	852185.15	10.07	23.05	-2.98	-12.98
PZ-09	Water Level	10/31/2019	444082.13	849471.64	9.41	24.05	-4.64	-14.64
PZ-10	Water Level	11/1/2019	444949.09	851673.98	12.17	22.91	-0.74	-10.74
PZ-11	Water Level	11/22/2019	443222.86	849280.51	9.37	19.08	-4.71	-9.71
PZ-12	Water Level	11/22/2019	443593.34	849396.87	7.90	18.70	-5.80	-10.80

**Notes:**

1. Georgia State Plane - East Coordinates.
  2. NAVD 88 - North American Vertical Datum of 1988
- ft BTOC - feet below top of casing

**Table 2**  
**Groundwater Sampling Event Summary**  
**Plant McManus**  
**Brunswick, GA**

Well ID	Hydraulic Location	August 2019	October 2019	November 2019	Status of Monitoring
Purpose of Sampling Event		Appendix IV Scan	Assessment	Resample	
<b>MCM-01</b>	Upgradient	S01	A01	R01	Assessment
<b>MCM-02</b>	Upgradient	S01	A01	R01	Assessment
<b>MCM-04</b>	Downgradient	S01	A01	R01	Assessment
<b>MCM-05</b>	Downgradient	S01	A01	R01	Assessment
<b>MCM-06</b>	Downgradient	S01	A01	--	Assessment
<b>MCM-07</b>	Downgradient	S01	A01	R01	Assessment
<b>MCM-08</b>	Upgradient	S01	A01	R01	Assessment
<b>MCM-11</b>	Upgradient	S01	A01	--	Assessment
<b>MCM-12</b>	Downgradient	S01	A01	--	Assessment
<b>MCM-14</b>	Downgradient	S01	A01	R01	Assessment
<b>MCM-15</b>	Upgradient	S01	A01	--	Assessment
<b>MCM-16</b>	Upgradient	S01	A01	--	Assessment
<b>MCM-17</b>	Downgradient	S01	A01	R01	Assessment

Notes:

S## - Full Appendix IV parameter scan event number

A## - Assessment monitoring event number

R##- Resample event number

-- Not Sampled

**Table 3**  
**Summary of Groundwater Elevations**  
**Plant McManus**  
**Brunswick, GA**

	Collection Date	August 29, 2019	August 26, 2019	October 15, 2019	October 16, 2019
	High Tide <sup>1</sup>	8:49	5:41	10:47	11:19
	Low Tide <sup>1</sup>	14:42	11:51	16:51	17:33
	Start Collection	8:40	12:48	10:57	17:13
	Stop Collection	9:45	13:24	12:14	18:42
Well ID	Top of Casing Elevation (ft NAVD 88)	High Tide GW Elevation (ft NAVD 88)	Low Tide GW Elevation (ft NAVD 88)	High Tide GW Elevation (ft NAVD 88)	Low Tide GW Elevation (ft NAVD 88)
<i>Compliance Monitoring Well Network</i>					
MCM-01	8.76	1.94	1.52	1.90	1.82
MCM-02	10.58	3.91	3.56	3.70	3.79
MCM-04	12.47	1.23	0.18	1.46	0.76
MCM-05	10.09	0.13	-1.43	0.49	-0.80
MCM-06	10.17	0.84	-1.30	1.14	-0.90
MCM-07	10.22	1.69	0.22	1.57	0.82
MCM-08	9.41	3.86	2.90	2.69	3.16
MCM-11	10.37	5.37	4.49	2.02	4.76
MCM-12	12.03	1.25	0.94	1.35	1.31
MCM-14	11.66	1.39	-0.89	1.50	-0.44
MCM-15	12.87	1.70	1.07	1.74	2.54
MCM-16	15.81	4.58	4.26	4.24	4.37
MCM-17	11.67	1.27	0.05	0.38	0.68
<i>Piezometer</i>					
MCM-03	10.00	-0.58	-0.91	-0.11	-0.07
MCM-09	9.77	2.45	1.61	2.44	3.22
MCM-10	11.77	4.75	3.74	3.23	4.36
MCM-13	12.67	1.22	0.43	1.39	1.08

**Notes:**

1. High and low tide data pulled from the Crispin Island, Turtle River, Georgia tide chart generated using XTide: <http://tides.mobilegeographics.com/locations/1424>

NAVD 88 - North American Vertical Datum of 1988

GW - groundwater

**Table 4**  
**Horizontal Groundwater Flow Velocity Calculations**  
**Plant McManus**  
**Brunswick, GA**

Well ID		$h_1$	$h_2$	K (ft/day) Average K of AP-1 wells	$n_e$	dh	L (ft)	i (ft/ft)	Velocity (ft/day)
<i>August 26, 2019 - Low Tide</i>									
MCM-08	MCM-07	2.90	0.22	3.58	0.35	2.68	567.47	0.005	0.048
MCM-16	MCM-02	4.26	3.56	3.58	0.35	0.70	75.63	0.009	0.095
<i>October 16, 2019 - Low Tide</i>									
MCM-08	MCM-07	3.16	0.82	3.58	0.35	2.34	567.47	0.004	0.042
MCM-16	MCM-02	4.37	3.79	3.58	0.35	0.58	75.63	0.008	0.078
									0.066

Notes:

K = hydraulic conductivity based on aquifer performance tests (revised 10/2019)

i = hydraulic gradient

$n_e$  = effective porosity

dh = change between  $h_1$  and  $h_2$

$h_1$  and  $h_2$  = groundwater elevation at location 1 and 2

L = distance between locations 1 and 2

ft = feet

**Table 5**  
**Summary of Groundwater Analytical Data**  
**Plant McManus**  
**Brunswick, GA**

List <sup>1</sup>	Parameter	Well ID & Sample Date								
		MCM-01	MCM-01	MCM-01 resample	MCM-02	MCM-02	MCM-02 resample	MCM-04	MCM-04	MCM-04 resample
		8/27/2019	10/16/2019	11/20/2019	8/28/2019	10/16/2019	11/19/2019	8/27/2019	10/15/2019	11/20/2019
APPENDIX III	Boron	--	ND (0.036 J)	--	--	0.085	--	--	0.068	--
	Calcium	--	13.6	--	--	4.9	--	--	15.5	--
	Chloride	--	21.4	--	--	33.1	--	--	46.0	--
	Fluoride	ND	ND (0.046 J)	--	ND	ND (0.044 J)	--	ND	ND (0.095 J)	--
	pH <sup>2</sup>	5.58	5.72	5.77	4.99	4.98	5.11	5.05	4.89	5.03
	Sulfate	--	31.9	--	--	24.4	--	--	105	--
	TDS	--	104	--	--	96.0	--	--	237	--
APPENDIX IV	Antimony	ND	ND	--	ND	ND	--	ND	ND	--
	Arsenic	0.0079	0.010	0.0064	ND	ND (0.0030 J)	ND (0.00057 J)	0.0072	ND (0.0038 J)	--
	Barium	0.077	0.074	--	0.10	0.10	--	0.083	0.082	--
	Beryllium	ND (0.000090 J)	ND	--	ND (0.00011 J)	ND (0.00013 J)	--	ND (0.00032 J)	ND (0.00035 J)	--
	Cadmium	ND	--	--	ND	--	--	ND	--	--
	Chromium	ND (0.00079 J)	ND	--	ND (0.0035 J)	ND	--	ND (0.0018 J)	ND (0.0012 J)	--
	Cobalt	ND	ND	--	ND (0.00042 J)	ND (0.00037 J)	--	0.0078	0.0085	0.0090
	Lead	ND	ND	--	ND	ND	--	ND	ND	--
	Lithium	ND	ND	--	ND	ND	--	ND (0.0020 J)	ND (0.0019 J)	--
	Mercury	ND	--	--	ND	--	--	ND	--	--
	Molybdenum	ND	ND	--	ND	ND	--	ND	ND	--
	Radium	1.20 U	1.40 U	--	0.679 U	0.422 U	--	4.40	4.92	--
	Selenium	ND	ND	--	ND	ND	--	ND	ND	--
	Thallium	ND	ND	--	ND	ND	--	ND	ND	--

Notes:

MCL indicates Environmental Protection Agency (EPA) and Georgia Environmental Protection Division (EPD) maximum contaminant level

(SMCL) indicates a secondary MCL that is established by EPA as a general guideline only (not enforced)

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TDS indicates total dissolved solids

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

Appendix III = indicator parameters evaluated during Detection Monitoring; Appendix IV = parameters evaluated during Assessment Monitoring

-- indicates the parameter was not analyzed



**Table 5  
Summary of Groundwater Analytical Data  
Plant McManus  
Brunswick, GA**

List <sup>1</sup>	Parameter	Well ID & Sample Date							
		MCM-05	MCM-05	MCM-05 resample	MCM-06	MCM-06	MCM-07	MCM-07	MCM-07 resample
		8/28/2019	10/16/2019	11/20/2019	8/28/2019	10/17/2019	8/28/2019	10/17/2019	11/20/2019
APPENDIX III	Boron	--	0.49	0.53	--	1.30	--	1.1	1.3
	Calcium	--	55.2	55.8	--	309	--	260	308
	Chloride	--	413	1480	--	9930	--	8210	9810
	Fluoride	0.36	0.41	0.34	ND	ND	ND	ND	ND
	pH <sup>2</sup>	6.69	6.64	6.58	6.87	6.86	6.35	6.40	6.27
	Sulfate	--	158	132	--	507	--	1230	1550
	TDS	--	2860	2640	--	16100	--	13200	16700
APPENDIX IV	Antimony	ND	ND	--	ND (0.00098 J)	ND (0.00090 J)	ND	ND	--
	Arsenic	ND (0.0019 J)	ND (0.0047 J)	--	0.50	0.34	0.011	ND (0.0046 J)	--
	Barium	0.011	0.012	--	0.13	0.13	0.40	0.35	--
	Beryllium	ND	ND	--	ND	ND	ND	ND (0.000078 J)	--
	Cadmium	ND	--	--	ND	--	ND	--	--
	Chromium	ND (0.00047 J)	ND (0.00057 J)	--	ND (0.00085 J)	ND (0.0015 J)	ND (0.0024 J)	ND (0.0019 J)	--
	Cobalt	ND	ND	--	ND	ND	ND	ND	--
	Lead	ND	ND	--	ND	ND (0.00012 J)	ND (0.00010 J)	ND	--
	Lithium	ND (0.023 J)	ND (0.021 J)	--	0.13	0.12	0.12	0.096	0.12
	Mercury	ND	--	--	ND	--	ND	--	--
	Molybdenum	ND	ND	--	ND (0.0017 J)	ND (0.0017 J)	ND	ND	--
	Radium	1.67	1.92	--	6.86	7.85	8.73	7.97	9.80
	Selenium	ND	ND	--	ND (0.0014 J)	ND (0.0066 J)	ND (0.0019 J)	ND (0.0049 J)	--
	Thallium	ND	ND	--	ND	ND (0.000076 J)	ND	ND	--

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Appendix III = indicator parameters evaluated during Detection Monitoring; Appendix IV = parameters evaluated during Assessment Monitoring

-- indicates the parameter was not analyzed

**Table 5**  
**Summary of Groundwater Analytical Data**  
**Plant McManus**  
**Brunswick, GA**

List <sup>1</sup>	Parameter	Well ID & Sample Date						
		MCM-08	MCM-08	MCM-08 resample	MCM-11	MCM-11	MCM-12	MCM-12
		8/28/2019	10/16/2019	11/19/2019	8/28/2019	10/16/2019	8/27/2019	10/15/2019
APPENDIX III	Boron	--	0.39	--	--	ND (0.032 J)	--	1.1
	Calcium	--	53.0	--	--	2.2	--	7.9
	Chloride	--	2150	--	--	12.2	--	744
	Fluoride	ND	ND (0.10 J)	--	ND (0.068 J)	ND (0.10 J)	1.1	1.0
	pH <sup>2</sup>	5.11	5.23	5.29	4.87	5.05	6.24	6.19
	Sulfate	--	423	--	--	17.4	--	ND (0.54 J)
	TDS	--	4070	--	--	82.0	--	1730
APPENDIX IV	Antimony	ND	ND	--	ND	ND	ND	ND
	Arsenic	0.023	0.024	--	ND (0.0050 J)	0.0054	ND (0.0011 J)	ND (0.0024 J)
	Barium	0.52	0.54	--	0.035	0.036	0.14	0.14
	Beryllium	ND (0.00061 J)	ND (0.00059 J)	--	ND (0.000084 J)	ND (0.000090 J)	ND (0.00090 J)	ND (0.00079 J)
	Cadmium	ND	--	--	ND	--	ND	--
	Chromium	ND (0.0095 J)	0.010	--	ND (0.00053 J)	ND (0.00072 J)	ND (0.0056 J)	ND (0.0057 J)
	Cobalt	0.0061	0.0063	ND (0.0062 J)	ND	ND	ND (0.00070 J)	ND (0.00054 J)
	Lead	ND	ND	--	ND	ND	ND (0.00022 J)	ND (0.000056 J)
	Lithium	ND (0.0031 J)	ND (0.0027 J)	--	ND (0.00082 J)	ND	ND (0.012 J)	ND (0.012 J)
	Mercury	ND	--	--	ND	--	ND	--
	Molybdenum	ND (0.0026 J)	ND (0.0026 J)	--	ND	ND	ND	ND
	Radium	20.6	25.3	--	0.434 U	0.923 U	2.91	3.28
	Selenium	ND (0.0048 J)	ND (0.0043 J)	--	ND	ND	ND (0.0019 J)	ND
Thallium	ND	ND	--	ND	ND	ND	ND	

Notes:

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-- indicates the parameter was not analyzed

**Table 5**  
**Summary of Groundwater Analytical Data**  
**Plant McManus**  
**Brunswick, GA**

List <sup>1</sup>	Parameter	Well ID & Sample Date						
		MCM-14	MCM-14	MCM-14 resample	MCM-15	MCM-15	MCM-16	MCM-16
		8/26/2019	10/15/2019	11/21/2019	8/27/2019	10/15/2019	8/27/2019	10/16/2019
APPENDIX III	Boron	--	1.0	1.0	--	0.046	--	0.051
	Calcium	--	321	305	--	6.7	--	4.8
	Chloride	--	9050	8330	--	17.1	--	20.0
	Fluoride	ND	ND	ND	ND	ND (0.14 J)	ND	ND (0.044 J)
	pH <sup>2</sup>	6.62	6.58	6.67	5.35	5.32	4.88	4.89
	Sulfate	--	ND	1070	--	17.9	--	28.5
	TDS	--	15400	15800	--	107	--	95.0
APPENDIX IV	Antimony	ND (0.00040 J)	ND	--	ND	ND	ND	ND
	Arsenic	ND (0.0022 J)	0.0067	--	ND (0.0041 J)	ND (0.0038 J)	ND (0.0019 J)	ND (0.0010 J)
	Barium	0.12	0.12	--	0.048	0.041	0.13	0.13
	Beryllium	ND (0.00010 J)	ND	--	ND (0.00042 J)	ND (0.00034 J)	ND (0.00021 J)	ND (0.00014 J)
	Cadmium	ND	--	--	ND	--	ND	--
	Chromium	ND (0.00071 J)	ND (0.00076 J)	--	ND (0.0026 J)	ND (0.0026 J)	ND (0.00043 J)	ND
	Cobalt	ND	ND	--	ND	ND	ND (0.00030 J)	ND
	Lead	ND	ND	--	ND (0.00011 J)	ND (0.00038 J)	ND	ND
	Lithium	0.059	ND (0.056 J)	0.052	ND (0.0020 J)	ND (0.0016 J)	ND	ND
	Mercury	ND	--	--	ND	--	ND	--
	Molybdenum	ND	ND	--	ND	ND	ND	ND
	Radium	7.68	8.70	7.34	2.33	0.979 U	1.03 U	1.86
	Selenium	ND (0.0025 J)	ND (0.0030 J)	--	ND (0.0018 J)	ND	ND	ND
Thallium	ND	ND	--	ND	ND	ND (0.000066 J)	ND	

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-- indicates the parameter was not analyzed

**Table 5**  
**Summary of Groundwater Analytical Data**  
**Plant McManus**  
**Brunswick, GA**

List <sup>1</sup>	Parameter			
		MCM-17	MCM-17	MCM-17 resample
		8/27/2019	10/16/2019	11/21/2019
APPENDIX III	Boron	--	1.6	1.5
	Calcium	--	118	125
	Chloride	--	4050	3890
	Fluoride	ND	ND (0.083 J)	ND
	pH <sup>2</sup>	6.23	6.54	6.40
	Sulfate	--	470	428
	TDS	--	7740	7720
APPENDIX IV	Antimony	ND	ND	--
	Arsenic	ND (0.0024 J)	ND (0.0043 J)	ND (0.0031 J)
	Barium	0.11	0.14	--
	Beryllium	ND (0.00018 J)	ND (0.00014 J)	--
	Cadmium	ND	--	--
	Chromium	ND (0.0066 J)	ND (0.0063 J)	--
	Cobalt	ND	ND	--
	Lead	ND (0.00014 J)	ND (0.00034 J)	--
	Lithium	ND (0.023 J)	ND (0.024 J)	--
	Mercury	ND	--	--
	Molybdenum	ND	ND	--
	Radium	5.82	7.50	8.89
	Selenium	ND (0.0018 J)	ND	--
Thallium	ND	ND	--	

Notes:

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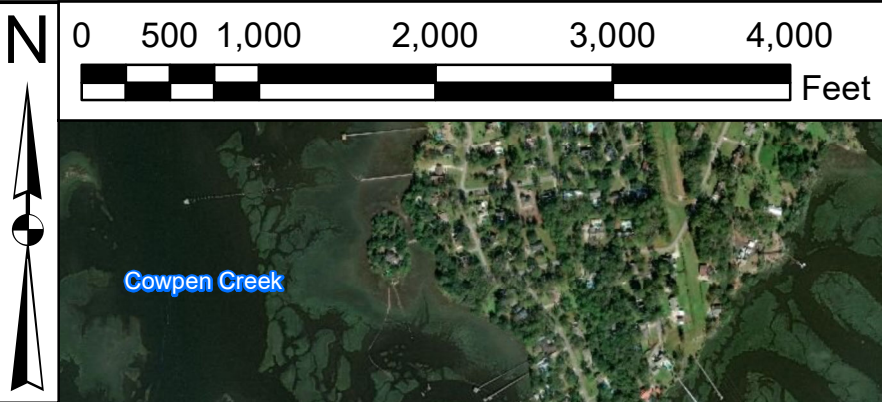
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# FIGURES



**Legend**  
 CCR Permitted Boundary

**Resolute**  
 Environmental & Water Resources Consulting

**Plant McManus  
 Site Location Map**

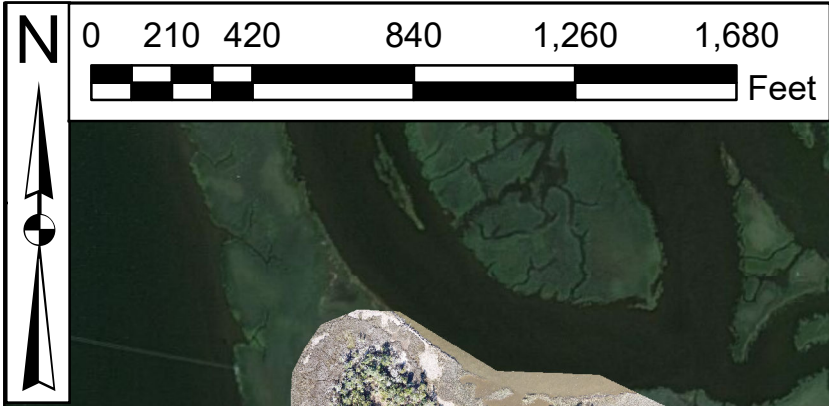
**Figure  
 1**

Woodstock, GA

January 2020

Brunswick, GA

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**Legend**

- ⊕ Monitoring Well
- ▲ Piezometer
- ▭ CCR Permitted Boundary

Note:  
\*MCM-09 was abandoned in December 2019



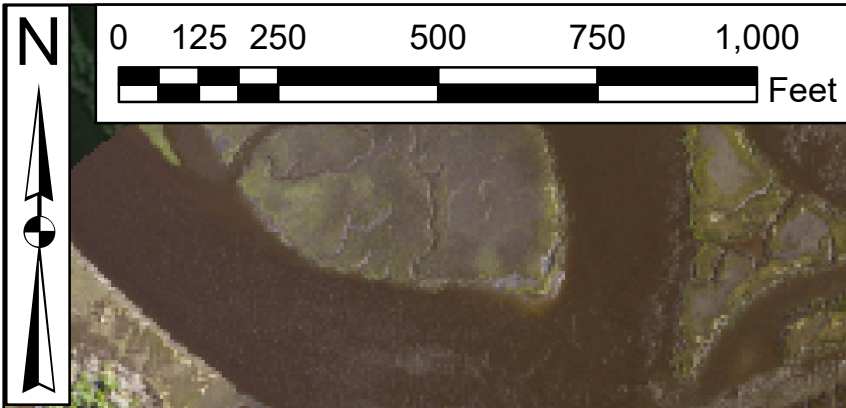
Woodstock, GA

February 2020

**Plant McManus  
Site Plan and Well Location Map**  
Brunswick, GA

**Figure  
2**

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- Legend**
- ⊕ Monitoring Well
  - ▲ Piezometer
  - Groundwater Flow
  - Groundwater Contours
  - ▭ CCR Permitted Boundary

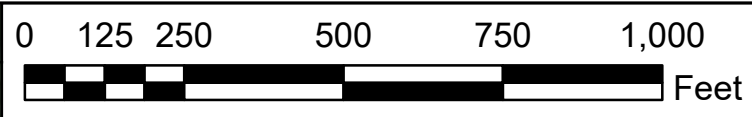
MCM-07  
0.41 Groundwater Elevation (Monitoring Well)

MW-10  
0.54 Groundwater Elevation (Piezometer)

**Notes:**  
Potentiometric surface elevations shown in ft NAVD 88.  
\* MCM-09 was abandoned in December 2019

		<b>Plant McManus Former AP-1 Potentiometric Surface Map Low Tide August 26, 2019</b>		<b>Figure 3</b>
		Woodstock, GA	February 2020	





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**Legend**

- Monitoring Well
- Piezometer
- Groundwater Flow
- Solid
- CCR Permitted Boundary

**MCM-07** Groundwater Elevation (Monitoring Well)  
0.41

**MW-10** Groundwater Elevation (Piezometer)  
0.54

**Notes:**  
Potentiometric surface elevations shown in ft NAVD 88.

\* MCM-09 was abandoned in December 2019

		<b>Plant McManus</b> <b>Former AP-1</b> <b>Potentiometric Surface Map</b> <b>Low Tide</b> <b>October 16, 2019</b>		<b>Figure</b>  <b>4</b>
		Woodstock, GA	February 2020	

# APPENDIX A

## Laboratory Analytical and Field Sampling Reports

**Appendix A1: Laboratory Analytical Data Packages and Data Validation Reports**

**Appendix A2: Field Sampling Forms**

# APPENDIX A1

## Laboratory Analytical and Data Validation Reports

December 17, 2019

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

RE: Project: Plant McManus APP. IV  
Pace Project No.: 2622524

Dear Joju Abraham:

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

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

Sincerely,



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

Enclosures

cc: Lea Millet, Resolute Environmental & Water Resources  
Lauren Petty, Southern Company Services, Inc.  
Kevin Stephenson, Resolute Environmental & Water  
Resources Consulting, LLC  
Rebecca Thornton, Pace Analytical Atlanta  
Stephen Wilson, Resolute Environmental & Water  
Resources Consulting, LLC



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: Plant McManus APP. IV

Pace Project No.: 2622524

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### **Pace Analytical Services Atlanta**

110 Technology Parkway Peachtree Corners, GA 30092

Florida DOH Certification #: E87315

Georgia DW Inorganics Certification #: 812

Georgia DW Microbiology Certification #: 812

North Carolina Certification #: 381

South Carolina Certification #: 98011001

Virginia Certification #: 460204

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### **Pace Analytical Services Asheville**

2225 Riverside Drive, Asheville, NC 28804

Florida/NELAP Certification #: E87648

Massachusetts Certification #: M-NC030

North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40

South Carolina Certification #: 99030001

Virginia/VELAP Certification #: 460222

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## SAMPLE SUMMARY

Project: Plant McManus APP. IV

Pace Project No.: 2622524

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622524001	MCM-01	Water	08/27/19 09:32	08/29/19 09:00
2622524002	MCM-02	Water	08/28/19 13:33	08/29/19 09:00
2622524003	MCM-04	Water	08/27/19 15:48	08/29/19 09:00
2622524004	MCM-05	Water	08/28/19 13:15	08/29/19 09:00
2622524005	MCM-06	Water	08/28/19 12:32	08/29/19 09:00
2622524006	MCM-07	Water	08/28/19 10:32	08/29/19 09:00
2622524007	MCM-08	Water	08/28/19 11:23	08/29/19 09:00
2622524008	MCM-11	Water	08/28/19 09:35	08/29/19 09:00
2622524009	MCM-12	Water	08/27/19 11:34	08/29/19 09:00
2622524010	MCM-14	Water	08/26/19 15:52	08/29/19 09:00
2622524011	MCM-15	Water	08/27/19 14:59	08/29/19 09:00
2622524012	MCM-16	Water	08/27/19 11:48	08/29/19 09:00
2622524013	MCM-17	Water	08/27/19 13:00	08/29/19 09:00
2622524014	Dup-01	Water	08/26/19 00:00	08/29/19 09:00
2622524015	Dup-02	Water	08/28/19 00:00	08/29/19 09:00
2622524016	FBL 082819-01	Water	08/28/19 14:20	08/29/19 09:00
2622524017	EQBL 082819-01	Water	08/28/19 14:25	08/29/19 09:00
2622524018	FBL 082819-02	Water	08/28/19 15:20	08/29/19 09:00
2622524019	EQBL 082819-02	Water	08/28/19 15:25	08/29/19 09:00

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### SAMPLE ANALYTE COUNT

Project: Plant McManus APP. IV  
Pace Project No.: 2622524

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2622524001	MCM-01	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
2622524002	MCM-02	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
2622524003	MCM-04	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
2622524004	MCM-05	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
2622524005	MCM-06	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
2622524006	MCM-07	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
2622524007	MCM-08	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
2622524008	MCM-11	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
2622524009	MCM-12	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
2622524010	MCM-14	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
2622524011	MCM-15	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
2622524012	MCM-16	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
2622524013	MCM-17	EPA 6020B	CSW	12	PASI-GA

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### SAMPLE ANALYTE COUNT

Project: Plant McManus APP. IV

Pace Project No.: 2622524

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2622524014	Dup-01	EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
		EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
2622524015	Dup-02	EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
		EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
2622524016	FBL 082819-01	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
		EPA 6020B	CSW	12	PASI-GA
2622524017	EQBL 082819-01	EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
		EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
2622524018	FBL 082819-02	EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
		EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
2622524019	EQBL 082819-02	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
		EPA 6020B	CSW	12	PASI-GA

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### ANALYTICAL RESULTS

Project: Plant McManus APP. IV  
Pace Project No.: 2622524

Sample: MCM-01		Lab ID: 2622524001		Collected: 08/27/19 09:32		Received: 08/29/19 09:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 01:03	7440-36-0		
Arsenic	<b>0.0079</b>	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 01:03	7440-38-2		
Barium	<b>0.077</b>	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 01:03	7440-39-3		
Beryllium	<b>0.000090J</b>	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 01:03	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 01:03	7440-43-9		
Chromium	<b>0.00079J</b>	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 01:03	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 01:03	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 01:03	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 01:03	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 01:03	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 01:03	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 01:03	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 09:41	09/03/19 13:23	7439-97-6		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	ND	mg/L	0.30	0.050	1		09/05/19 13:59	16984-48-8		

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### ANALYTICAL RESULTS

Project: Plant McManus APP. IV  
Pace Project No.: 2622524

Sample: MCM-02		Lab ID: 2622524002		Collected: 08/28/19 13:33		Received: 08/29/19 09:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 01:09	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 01:09	7440-38-2		
Barium	<b>0.10</b>	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 01:09	7440-39-3		
Beryllium	<b>0.00011J</b>	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 01:09	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 01:09	7440-43-9		
Chromium	<b>0.0035J</b>	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 01:09	7440-47-3		
Cobalt	<b>0.00042J</b>	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 01:09	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 01:09	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 01:09	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 01:09	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 01:09	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 01:09	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 09:41	09/03/19 13:37	7439-97-6		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	ND	mg/L	0.30	0.050	1		09/05/19 15:26	16984-48-8		

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## ANALYTICAL RESULTS

Project: Plant McManus APP. IV

Pace Project No.: 2622524

Sample: MCM-04		Lab ID: 2622524003		Collected: 08/27/19 15:48		Received: 08/29/19 09:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 01:14	7440-36-0		
Arsenic	<b>0.0072</b>	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 01:14	7440-38-2		
Barium	<b>0.083</b>	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 01:14	7440-39-3		
Beryllium	<b>0.00032J</b>	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 01:14	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 01:14	7440-43-9		
Chromium	<b>0.0018J</b>	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 01:14	7440-47-3		
Cobalt	<b>0.0078</b>	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 01:14	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 01:14	7439-92-1		
Lithium	<b>0.0020J</b>	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 01:14	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 01:14	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 01:14	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 01:14	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 09:41	09/03/19 13:44	7439-97-6		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	ND	mg/L	0.30	0.050	1		09/05/19 14:13	16984-48-8		

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### ANALYTICAL RESULTS

Project: Plant McManus APP. IV  
Pace Project No.: 2622524

Sample: MCM-05		Lab ID: 2622524004		Collected: 08/28/19 13:15		Received: 08/29/19 09:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 01:32	7440-36-0	
Arsenic	<b>0.0019J</b>	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 01:32	7440-38-2	
Barium	<b>0.011</b>	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 01:32	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 01:32	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 01:32	7440-43-9	
Chromium	<b>0.00047J</b>	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 01:32	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 01:32	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 01:32	7439-92-1	
Lithium	<b>0.023J</b>	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 01:32	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 01:32	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 01:32	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 01:32	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 09:41	09/03/19 13:46	7439-97-6	
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0 Rev 2.1 1993							
Fluoride	<b>0.36</b>	mg/L	0.30	0.050	1		09/05/19 14:42	16984-48-8	

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### ANALYTICAL RESULTS

Project: Plant McManus APP. IV

Pace Project No.: 2622524

Sample: MCM-06		Lab ID: 2622524005		Collected: 08/28/19 12:32		Received: 08/29/19 09:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	<b>0.00098J</b>	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 01:37	7440-36-0		
Arsenic	<b>0.50</b>	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 01:37	7440-38-2		
Barium	<b>0.13</b>	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 01:37	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 01:37	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 01:37	7440-43-9		
Chromium	<b>0.00085J</b>	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 01:37	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 01:37	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 01:37	7439-92-1		
Lithium	<b>0.13</b>	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 01:37	7439-93-2		
Molybdenum	<b>0.0017J</b>	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 01:37	7439-98-7		
Selenium	<b>0.0014J</b>	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 01:37	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 01:37	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 09:41	09/03/19 13:49	7439-97-6		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	ND	mg/L	0.30	0.050	1		09/05/19 14:28	16984-48-8		

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### ANALYTICAL RESULTS

Project: Plant McManus APP. IV  
Pace Project No.: 2622524

Sample: MCM-07		Lab ID: 2622524006		Collected: 08/28/19 10:32		Received: 08/29/19 09:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 01:43	7440-36-0		
Arsenic	<b>0.011</b>	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 01:43	7440-38-2		
Barium	<b>0.40</b>	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 01:43	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 01:43	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 01:43	7440-43-9		
Chromium	<b>0.0024J</b>	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 01:43	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 01:43	7440-48-4		
Lead	<b>0.00010J</b>	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 01:43	7439-92-1		
Lithium	<b>0.12</b>	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 01:43	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 01:43	7439-98-7		
Selenium	<b>0.0019J</b>	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 01:43	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 01:43	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 09:41	09/03/19 13:51	7439-97-6		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	ND	mg/L	0.30	0.050	1		09/05/19 12:39	16984-48-8		

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### ANALYTICAL RESULTS

Project: Plant McManus APP. IV  
Pace Project No.: 2622524

Sample: MCM-08		Lab ID: 2622524007		Collected: 08/28/19 11:23		Received: 08/29/19 09:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 01:49	7440-36-0		
Arsenic	<b>0.023</b>	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 01:49	7440-38-2		
Barium	<b>0.52</b>	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 01:49	7440-39-3		
Beryllium	<b>0.00061J</b>	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 01:49	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 01:49	7440-43-9		
Chromium	<b>0.0095J</b>	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 01:49	7440-47-3		
Cobalt	<b>0.0061</b>	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 01:49	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 01:49	7439-92-1		
Lithium	<b>0.0031J</b>	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 01:49	7439-93-2		
Molybdenum	<b>0.0026J</b>	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 01:49	7439-98-7		
Selenium	<b>0.0048J</b>	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 01:49	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 01:49	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 09:41	09/03/19 13:53	7439-97-6		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	ND	mg/L	0.30	0.050	1		09/05/19 12:53	16984-48-8		

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### ANALYTICAL RESULTS

Project: Plant McManus APP. IV

Pace Project No.: 2622524

Sample: MCM-11		Lab ID: 2622524008		Collected: 08/28/19 09:35		Received: 08/29/19 09:00		Matrix: Water	
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 01:55	7440-36-0	
Arsenic	<b>0.0050J</b>	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 01:55	7440-38-2	
Barium	<b>0.035</b>	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 01:55	7440-39-3	
Beryllium	<b>0.000084J</b>	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 01:55	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 01:55	7440-43-9	
Chromium	<b>0.00053J</b>	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 01:55	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 01:55	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 01:55	7439-92-1	
Lithium	<b>0.00082J</b>	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 01:55	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 01:55	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 01:55	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 01:55	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 09:41	09/03/19 13:56	7439-97-6	
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0 Rev 2.1 1993							
Fluoride	<b>0.068J</b>	mg/L	0.30	0.050	1		09/05/19 12:26	16984-48-8	

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### ANALYTICAL RESULTS

Project: Plant McManus APP. IV  
Pace Project No.: 2622524

Sample: MCM-12		Lab ID: 2622524009		Collected: 08/27/19 11:34		Received: 08/29/19 09:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 18:34	7440-36-0		
Arsenic	<b>0.0011J</b>	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 18:34	7440-38-2		
Barium	<b>0.14</b>	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 18:34	7440-39-3		
Beryllium	<b>0.00090J</b>	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 18:34	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 18:34	7440-43-9		
Chromium	<b>0.0056J</b>	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 18:34	7440-47-3		
Cobalt	<b>0.00070J</b>	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 18:34	7440-48-4		
Lead	<b>0.00022J</b>	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 18:34	7439-92-1		
Lithium	<b>0.012J</b>	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 18:34	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 18:34	7439-98-7		
Selenium	<b>0.0019J</b>	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 18:34	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 18:34	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 09:41	09/03/19 13:58	7439-97-6		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	<b>1.1</b>	mg/L	0.30	0.050	1		09/05/19 11:18	16984-48-8		

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### ANALYTICAL RESULTS

Project: Plant McManus APP. IV  
Pace Project No.: 2622524

Sample: MCM-14		Lab ID: 2622524010		Collected: 08/26/19 15:52		Received: 08/29/19 09:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	<b>0.00040J</b>	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 18:57	7440-36-0		
Arsenic	<b>0.0022J</b>	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 18:57	7440-38-2		
Barium	<b>0.12</b>	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 18:57	7440-39-3		
Beryllium	<b>0.00010J</b>	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 18:57	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 18:57	7440-43-9		
Chromium	<b>0.00071J</b>	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 18:57	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 18:57	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 18:57	7439-92-1		
Lithium	<b>0.059</b>	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 18:57	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 18:57	7439-98-7		
Selenium	<b>0.0025J</b>	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 18:57	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 18:57	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 09:41	09/03/19 14:01	7439-97-6		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	ND	mg/L	0.30	0.050	1		09/05/19 10:08	16984-48-8	M1	

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### ANALYTICAL RESULTS

Project: Plant McManus APP. IV  
Pace Project No.: 2622524

Sample: MCM-15		Lab ID: 2622524011		Collected: 08/27/19 14:59		Received: 08/29/19 09:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 19:02	7440-36-0		
Arsenic	<b>0.0041J</b>	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 19:02	7440-38-2		
Barium	<b>0.048</b>	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 19:02	7440-39-3		
Beryllium	<b>0.00042J</b>	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 19:02	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 19:02	7440-43-9		
Chromium	<b>0.0026J</b>	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 19:02	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 19:02	7440-48-4		
Lead	<b>0.00011J</b>	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 19:02	7439-92-1		
Lithium	<b>0.0020J</b>	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 19:02	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 19:02	7439-98-7		
Selenium	<b>0.0018J</b>	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 19:02	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 19:02	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 09:41	09/03/19 14:03	7439-97-6		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	ND	mg/L	0.30	0.050	1		09/05/19 11:59	16984-48-8		

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## ANALYTICAL RESULTS

Project: Plant McManus APP. IV

Pace Project No.: 2622524

Sample: MCM-16		Lab ID: 2622524012		Collected: 08/27/19 11:48		Received: 08/29/19 09:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 19:08	7440-36-0		
Arsenic	<b>0.0019J</b>	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 19:08	7440-38-2		
Barium	<b>0.13</b>	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 19:08	7440-39-3		
Beryllium	<b>0.00021J</b>	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 19:08	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 19:08	7440-43-9		
Chromium	<b>0.00043J</b>	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 19:08	7440-47-3		
Cobalt	<b>0.00030J</b>	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 19:08	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 19:08	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 19:08	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 19:08	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 19:08	7782-49-2		
Thallium	<b>0.000066J</b>	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 19:08	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 09:41	09/03/19 14:05	7439-97-6		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	ND	mg/L	0.30	0.050	1		09/05/19 11:32	16984-48-8		

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### ANALYTICAL RESULTS

Project: Plant McManus APP. IV

Pace Project No.: 2622524

Sample: MCM-17		Lab ID: 2622524013		Collected: 08/27/19 13:00		Received: 08/29/19 09:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 19:14	7440-36-0	
Arsenic	<b>0.0024J</b>	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 19:14	7440-38-2	
Barium	<b>0.11</b>	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 19:14	7440-39-3	
Beryllium	<b>0.00018J</b>	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 19:14	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 19:14	7440-43-9	
Chromium	<b>0.0066J</b>	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 19:14	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 19:14	7440-48-4	
Lead	<b>0.00014J</b>	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 19:14	7439-92-1	
Lithium	<b>0.023J</b>	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 19:14	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 19:14	7439-98-7	
Selenium	<b>0.0018J</b>	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 19:14	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 19:14	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 09:41	09/03/19 14:12	7439-97-6	
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0 Rev 2.1 1993							
Fluoride	ND	mg/L	0.30	0.050	1		09/05/19 11:45	16984-48-8	

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### ANALYTICAL RESULTS

Project: Plant McManus APP. IV  
Pace Project No.: 2622524

Sample: Dup-01		Lab ID: 2622524014		Collected: 08/26/19 00:00		Received: 08/29/19 09:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 19:31	7440-36-0		
Arsenic	<b>0.0028J</b>	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 19:31	7440-38-2		
Barium	<b>0.12</b>	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 19:31	7440-39-3		
Beryllium	<b>0.00010J</b>	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 19:31	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 19:31	7440-43-9		
Chromium	<b>0.00092J</b>	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 19:31	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 19:31	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 19:31	7439-92-1		
Lithium	<b>0.063</b>	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 19:31	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 19:31	7439-98-7		
Selenium	<b>0.0024J</b>	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 19:31	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 19:31	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 09:41	09/03/19 14:15	7439-97-6		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	ND	mg/L	0.30	0.050	1		09/05/19 15:40	16984-48-8		

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### ANALYTICAL RESULTS

Project: Plant McManus APP. IV  
Pace Project No.: 2622524

Sample: Dup-02		Lab ID: 2622524015		Collected: 08/28/19 00:00		Received: 08/29/19 09:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 19:37	7440-36-0		
Arsenic	<b>0.0044J</b>	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 19:37	7440-38-2		
Barium	<b>0.011</b>	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 19:37	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 19:37	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 19:37	7440-43-9		
Chromium	<b>0.00052J</b>	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 19:37	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 19:37	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 19:37	7439-92-1		
Lithium	<b>0.025J</b>	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 19:37	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 19:37	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 19:37	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 19:37	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 09:41	09/03/19 14:17	7439-97-6		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	<b>0.42</b>	mg/L	0.30	0.050	1		09/05/19 12:12	16984-48-8		

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### ANALYTICAL RESULTS

Project: Plant McManus APP. IV  
Pace Project No.: 2622524

Sample: FBL 082819-01		Lab ID: 2622524016		Collected: 08/28/19 14:20		Received: 08/29/19 09:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 19:43	7440-36-0	
Arsenic	<b>0.0019J</b>	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 19:43	7440-38-2	
Barium	ND	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 19:43	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 19:43	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 19:43	7440-43-9	
Chromium	ND	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 19:43	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 19:43	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 19:43	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 19:43	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 19:43	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 19:43	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 19:43	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 09:41	09/03/19 14:19	7439-97-6	
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0 Rev 2.1 1993							
Fluoride	ND	mg/L	0.30	0.050	1		09/05/19 13:47	16984-48-8	

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### ANALYTICAL RESULTS

Project: Plant McManus APP. IV  
Pace Project No.: 2622524

Sample: EQBL 082819-01      Lab ID: 2622524017      Collected: 08/28/19 14:25      Received: 08/29/19 09:00      Matrix: Water										
Parameters	Results	Units	Report Limit		MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b> Analytical Method: EPA 6020B      Preparation Method: EPA 3005A										
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 19:48	7440-36-0		
Arsenic	<b>0.0018J</b>	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 19:48	7440-38-2		
Barium	ND	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 19:48	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 19:48	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 19:48	7440-43-9		
Chromium	ND	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 19:48	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 19:48	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 19:48	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 19:48	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 19:48	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 19:48	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 19:48	7440-28-0		
<b>7470 Mercury</b> Analytical Method: EPA 7470A      Preparation Method: EPA 7470A										
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 09:41	09/03/19 14:22	7439-97-6		
<b>300.0 IC Anions 28 Days</b> Analytical Method: EPA 300.0 Rev 2.1 1993										
Fluoride	ND	mg/L	0.30	0.050	1		09/05/19 14:01	16984-48-8		

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### ANALYTICAL RESULTS

Project: Plant McManus APP. IV  
Pace Project No.: 2622524

Sample: <b>FBL 082819-02</b>		Lab ID: <b>2622524018</b>		Collected: 08/28/19 15:20		Received: 08/29/19 09:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 19:54	7440-36-0		
Arsenic	<b>0.0019J</b>	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 19:54	7440-38-2		
Barium	ND	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 19:54	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 19:54	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 19:54	7440-43-9		
Chromium	ND	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 19:54	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 19:54	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 19:54	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 19:54	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 19:54	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 19:54	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 19:54	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 09:41	09/03/19 14:24	7439-97-6		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	ND	mg/L	0.30	0.050	1		09/05/19 14:41	16984-48-8		

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### ANALYTICAL RESULTS

Project: Plant McManus APP. IV

Pace Project No.: 2622524

Sample: EQBL 082819-02		Lab ID: 2622524019		Collected: 08/28/19 15:25		Received: 08/29/19 09:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 20:00	7440-36-0		
Arsenic	<b>0.0018J</b>	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 20:00	7440-38-2		
Barium	ND	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 20:00	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 20:00	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 20:00	7440-43-9		
Chromium	ND	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 20:00	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 20:00	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 20:00	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 20:00	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 20:00	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 20:00	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 20:00	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 11:46	09/03/19 17:00	7439-97-6		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	ND	mg/L	0.30	0.050	1		09/05/19 14:55	16984-48-8		

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### QUALITY CONTROL DATA

Project: Plant McManus APP. IV

Pace Project No.: 2622524

QC Batch:	34626	Analysis Method:	EPA 7470A
QC Batch Method:	EPA 7470A	Analysis Description:	7470 Mercury
Associated Lab Samples:	2622524001, 2622524002, 2622524003, 2622524004, 2622524005, 2622524006, 2622524007, 2622524008, 2622524009, 2622524010, 2622524011, 2622524012, 2622524013, 2622524014, 2622524015, 2622524016, 2622524017, 2622524018		

METHOD BLANK:	155909	Matrix:	Water
Associated Lab Samples:	2622524001, 2622524002, 2622524003, 2622524004, 2622524005, 2622524006, 2622524007, 2622524008, 2622524009, 2622524010, 2622524011, 2622524012, 2622524013, 2622524014, 2622524015, 2622524016, 2622524017, 2622524018		

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	09/03/19 13:18	

LABORATORY CONTROL SAMPLE: 155910

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0025	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155912 155913

Parameter	Units	2622524001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.0025	0.0025	0.0025	0.0026	99	103	75-125	4	20	

SAMPLE DUPLICATE: 155911

Parameter	Units	2622630001 Result	Dup Result	RPD	Max RPD	Qualifiers
Mercury	mg/L	ND	ND		20	

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### QUALITY CONTROL DATA

Project: Plant McManus APP. IV  
Pace Project No.: 2622524

QC Batch: 34630 Analysis Method: EPA 7470A  
QC Batch Method: EPA 7470A Analysis Description: 7470 Mercury  
Associated Lab Samples: 2622524019

METHOD BLANK: 155919 Matrix: Water  
Associated Lab Samples: 2622524019

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	09/03/19 16:46	

LABORATORY CONTROL SAMPLE: 155920

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0027	107	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155921 155922

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2622561001 Result	Spike Conc.	Spike Conc.	Result						
Mercury	mg/L	ND	0.0025	0.0025	0.0025	0.0026	100	105	75-125	5	20

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### QUALITY CONTROL DATA

Project: Plant McManus APP. IV  
Pace Project No.: 2622524

QC Batch: 34568 Analysis Method: EPA 6020B  
QC Batch Method: EPA 3005A Analysis Description: 6020B MET  
Associated Lab Samples: 2622524001, 2622524002, 2622524003, 2622524004, 2622524005, 2622524006, 2622524007, 2622524008

METHOD BLANK: 155672 Matrix: Water  
Associated Lab Samples: 2622524001, 2622524002, 2622524003, 2622524004, 2622524005, 2622524006, 2622524007, 2622524008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	09/03/19 23:14	
Arsenic	mg/L	ND	0.0050	0.00035	09/03/19 23:14	
Barium	mg/L	ND	0.010	0.00049	09/03/19 23:14	
Beryllium	mg/L	ND	0.0030	0.000074	09/03/19 23:14	
Cadmium	mg/L	ND	0.0025	0.00011	09/03/19 23:14	
Chromium	mg/L	ND	0.010	0.00039	09/03/19 23:14	
Cobalt	mg/L	ND	0.0050	0.00030	09/03/19 23:14	
Lead	mg/L	ND	0.0050	0.000046	09/03/19 23:14	
Lithium	mg/L	ND	0.030	0.00078	09/03/19 23:14	
Molybdenum	mg/L	ND	0.010	0.00095	09/03/19 23:14	
Selenium	mg/L	ND	0.010	0.0013	09/03/19 23:14	
Thallium	mg/L	ND	0.0010	0.000052	09/03/19 23:14	

LABORATORY CONTROL SAMPLE: 155673

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.11	112	80-120	
Arsenic	mg/L	0.1	0.10	102	80-120	
Barium	mg/L	0.1	0.10	101	80-120	
Beryllium	mg/L	0.1	0.10	102	80-120	
Cadmium	mg/L	0.1	0.10	102	80-120	
Chromium	mg/L	0.1	0.10	103	80-120	
Cobalt	mg/L	0.1	0.10	103	80-120	
Lead	mg/L	0.1	0.10	100	80-120	
Lithium	mg/L	0.1	0.10	103	80-120	
Molybdenum	mg/L	0.1	0.10	104	80-120	
Selenium	mg/L	0.1	0.10	102	80-120	
Thallium	mg/L	0.1	0.10	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155674 155675

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2622502011 Result	Spike Conc.	Spike Conc.	MS Result								
Antimony	mg/L	0.00033J	0.1	0.1	0.11	0.12	114	118	75-125	4	20		
Arsenic	mg/L	ND	0.1	0.1	0.10	0.11	102	106	75-125	4	20		
Barium	mg/L	0.12	0.1	0.1	0.22	0.22	100	107	75-125	3	20		
Beryllium	mg/L	ND	0.1	0.1	0.10	0.11	101	106	75-125	5	20		
Cadmium	mg/L	0.00044J	0.1	0.1	0.10	0.11	103	105	75-125	2	20		

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**QUALITY CONTROL DATA**

Project: Plant McManus APP. IV

Pace Project No.: 2622524

Parameter	Units	155674		155675		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2622502011 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Chromium	mg/L	0.00092J	0.1	0.1	0.10	0.10	102	104	75-125	2	20		
Cobalt	mg/L	ND	0.1	0.1	0.10	0.10	101	103	75-125	1	20		
Lead	mg/L	0.00021J	0.1	0.1	0.099	0.10	98	101	75-125	3	20		
Lithium	mg/L	ND	0.1	0.1	0.10	0.11	100	105	75-125	5	20		
Molybdenum	mg/L	ND	0.1	0.1	0.11	0.11	106	110	75-125	4	20		
Selenium	mg/L	ND	0.1	0.1	0.10	0.11	99	107	75-125	8	20		
Thallium	mg/L	ND	0.1	0.1	0.099	0.10	99	101	75-125	2	20		

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### QUALITY CONTROL DATA

Project: Plant McManus APP. IV  
Pace Project No.: 2622524

QC Batch: 34569 Analysis Method: EPA 6020B  
QC Batch Method: EPA 3005A Analysis Description: 6020B MET  
Associated Lab Samples: 2622524009, 2622524010, 2622524011, 2622524012, 2622524013, 2622524014, 2622524015, 2622524016, 2622524017, 2622524018, 2622524019

METHOD BLANK: 155676 Matrix: Water  
Associated Lab Samples: 2622524009, 2622524010, 2622524011, 2622524012, 2622524013, 2622524014, 2622524015, 2622524016, 2622524017, 2622524018, 2622524019

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	09/04/19 18:22	
Arsenic	mg/L	ND	0.0050	0.00035	09/04/19 18:22	
Barium	mg/L	ND	0.010	0.00049	09/04/19 18:22	
Beryllium	mg/L	ND	0.0030	0.000074	09/04/19 18:22	
Cadmium	mg/L	ND	0.0025	0.00011	09/04/19 18:22	
Chromium	mg/L	ND	0.010	0.00039	09/04/19 18:22	
Cobalt	mg/L	ND	0.0050	0.00030	09/04/19 18:22	
Lead	mg/L	ND	0.0050	0.000046	09/04/19 18:22	
Lithium	mg/L	ND	0.030	0.00078	09/04/19 18:22	
Molybdenum	mg/L	ND	0.010	0.00095	09/04/19 18:22	
Selenium	mg/L	ND	0.010	0.0013	09/04/19 18:22	
Thallium	mg/L	ND	0.0010	0.000052	09/04/19 18:22	

LABORATORY CONTROL SAMPLE: 155677

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.11	112	80-120	
Arsenic	mg/L	0.1	0.10	101	80-120	
Barium	mg/L	0.1	0.10	105	80-120	
Beryllium	mg/L	0.1	0.099	99	80-120	
Cadmium	mg/L	0.1	0.10	104	80-120	
Chromium	mg/L	0.1	0.10	104	80-120	
Cobalt	mg/L	0.1	0.10	104	80-120	
Lead	mg/L	0.1	0.10	102	80-120	
Lithium	mg/L	0.1	0.099	99	80-120	
Molybdenum	mg/L	0.1	0.10	103	80-120	
Selenium	mg/L	0.1	0.10	104	80-120	
Thallium	mg/L	0.1	0.10	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155678 155679

Parameter	Units	2622524009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	ND	0.1	0.1	0.11	0.11	110	111	75-125	1	20	
Arsenic	mg/L	0.0011J	0.1	0.1	0.10	0.10	101	99	75-125	2	20	
Barium	mg/L	0.14	0.1	0.1	0.23	0.23	90	91	75-125	0	20	
Beryllium	mg/L	0.00090J	0.1	0.1	0.093	0.090	92	90	75-125	3	20	

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

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant McManus APP. IV

Pace Project No.: 2622524

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155678		155679		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		2622524009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Cadmium	mg/L	ND	0.1	0.1	0.097	0.096	97	96	75-125	1	20		
Chromium	mg/L	0.0056J	0.1	0.1	0.11	0.11	101	100	75-125	0	20		
Cobalt	mg/L	0.00070J	0.1	0.1	0.10	0.10	99	99	75-125	0	20		
Lead	mg/L	0.00022J	0.1	0.1	0.095	0.093	95	93	75-125	2	20		
Lithium	mg/L	0.012J	0.1	0.1	0.11	0.11	93	94	75-125	0	20		
Molybdenum	mg/L	ND	0.1	0.1	0.10	0.10	104	103	75-125	1	20		
Selenium	mg/L	0.0019J	0.1	0.1	0.10	0.099	100	97	75-125	3	20		
Thallium	mg/L	ND	0.1	0.1	0.096	0.094	96	94	75-125	1	20		

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant McManus APP. IV  
Pace Project No.: 2622524

QC Batch: 496024 Analysis Method: EPA 300.0 Rev 2.1 1993  
QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 2622524001, 2622524002, 2622524003, 2622524004, 2622524005, 2622524014

METHOD BLANK: 2672026 Matrix: Water  
Associated Lab Samples: 2622524001, 2622524002, 2622524003, 2622524004, 2622524005, 2622524014

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.10	0.050	09/05/19 07:56	

LABORATORY CONTROL SAMPLE: 2672027

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.6	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2672028 2672029

Parameter	Units	2622563004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	ND	2.5	2.5	2.5	2.7	100	105	90-110	4	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2672030 2672031

Parameter	Units	2622561002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.055J	2.5	2.5	3.2	3.2	125	127	90-110	1	10	M1

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant McManus APP. IV  
Pace Project No.: 2622524

QC Batch: 496032 Analysis Method: EPA 300.0 Rev 2.1 1993  
QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 2622524006, 2622524007, 2622524008, 2622524009, 2622524010, 2622524011, 2622524012, 2622524013, 2622524015, 2622524016, 2622524017, 2622524018, 2622524019

METHOD BLANK: 2672047 Matrix: Water  
Associated Lab Samples: 2622524006, 2622524007, 2622524008, 2622524009, 2622524010, 2622524011, 2622524012, 2622524013, 2622524015, 2622524016, 2622524017, 2622524018, 2622524019

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.10	0.050	09/05/19 09:39	

LABORATORY CONTROL SAMPLE: 2672048

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.6	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2672049 2672050

Parameter	Units	2622524010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	ND	2.5	2.5	ND	ND	0	0	90-110		10	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2672051 2672052

Parameter	Units	2622524017 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	ND	2.5	2.5	2.4	2.4	95	97	90-110	2	10	

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## QUALIFIERS

Project: Plant McManus APP. IV

Pace Project No.: 2622524

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### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

### LABORATORIES

PASI-A Pace Analytical Services - Asheville

PASI-GA Pace Analytical Services - Atlanta, GA

### ANALYTE QUALIFIERS

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

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant McManus APP. IV

Pace Project No.: 2622524

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622524001	MCM-01	EPA 3005A	34568	EPA 6020B	34599
2622524002	MCM-02	EPA 3005A	34568	EPA 6020B	34599
2622524003	MCM-04	EPA 3005A	34568	EPA 6020B	34599
2622524004	MCM-05	EPA 3005A	34568	EPA 6020B	34599
2622524005	MCM-06	EPA 3005A	34568	EPA 6020B	34599
2622524006	MCM-07	EPA 3005A	34568	EPA 6020B	34599
2622524007	MCM-08	EPA 3005A	34568	EPA 6020B	34599
2622524008	MCM-11	EPA 3005A	34568	EPA 6020B	34599
2622524009	MCM-12	EPA 3005A	34569	EPA 6020B	34600
2622524010	MCM-14	EPA 3005A	34569	EPA 6020B	34600
2622524011	MCM-15	EPA 3005A	34569	EPA 6020B	34600
2622524012	MCM-16	EPA 3005A	34569	EPA 6020B	34600
2622524013	MCM-17	EPA 3005A	34569	EPA 6020B	34600
2622524014	Dup-01	EPA 3005A	34569	EPA 6020B	34600
2622524015	Dup-02	EPA 3005A	34569	EPA 6020B	34600
2622524016	FBL 082819-01	EPA 3005A	34569	EPA 6020B	34600
2622524017	EQBL 082819-01	EPA 3005A	34569	EPA 6020B	34600
2622524018	FBL 082819-02	EPA 3005A	34569	EPA 6020B	34600
2622524019	EQBL 082819-02	EPA 3005A	34569	EPA 6020B	34600
2622524001	MCM-01	EPA 7470A	34626	EPA 7470A	34647
2622524002	MCM-02	EPA 7470A	34626	EPA 7470A	34647
2622524003	MCM-04	EPA 7470A	34626	EPA 7470A	34647
2622524004	MCM-05	EPA 7470A	34626	EPA 7470A	34647
2622524005	MCM-06	EPA 7470A	34626	EPA 7470A	34647
2622524006	MCM-07	EPA 7470A	34626	EPA 7470A	34647
2622524007	MCM-08	EPA 7470A	34626	EPA 7470A	34647
2622524008	MCM-11	EPA 7470A	34626	EPA 7470A	34647
2622524009	MCM-12	EPA 7470A	34626	EPA 7470A	34647
2622524010	MCM-14	EPA 7470A	34626	EPA 7470A	34647
2622524011	MCM-15	EPA 7470A	34626	EPA 7470A	34647
2622524012	MCM-16	EPA 7470A	34626	EPA 7470A	34647
2622524013	MCM-17	EPA 7470A	34626	EPA 7470A	34647
2622524014	Dup-01	EPA 7470A	34626	EPA 7470A	34647
2622524015	Dup-02	EPA 7470A	34626	EPA 7470A	34647
2622524016	FBL 082819-01	EPA 7470A	34626	EPA 7470A	34647
2622524017	EQBL 082819-01	EPA 7470A	34626	EPA 7470A	34647
2622524018	FBL 082819-02	EPA 7470A	34626	EPA 7470A	34647
2622524019	EQBL 082819-02	EPA 7470A	34630	EPA 7470A	34665
2622524001	MCM-01	EPA 300.0 Rev 2.1 1993	496024		
2622524002	MCM-02	EPA 300.0 Rev 2.1 1993	496024		
2622524003	MCM-04	EPA 300.0 Rev 2.1 1993	496024		
2622524004	MCM-05	EPA 300.0 Rev 2.1 1993	496024		
2622524005	MCM-06	EPA 300.0 Rev 2.1 1993	496024		
2622524006	MCM-07	EPA 300.0 Rev 2.1 1993	496032		
2622524007	MCM-08	EPA 300.0 Rev 2.1 1993	496032		
2622524008	MCM-11	EPA 300.0 Rev 2.1 1993	496032		

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant McManus APP. IV

Pace Project No.: 2622524

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622524009	MCM-12	EPA 300.0 Rev 2.1 1993	496032		
2622524010	MCM-14	EPA 300.0 Rev 2.1 1993	496032		
2622524011	MCM-15	EPA 300.0 Rev 2.1 1993	496032		
2622524012	MCM-16	EPA 300.0 Rev 2.1 1993	496032		
2622524013	MCM-17	EPA 300.0 Rev 2.1 1993	496032		
2622524014	Dup-01	EPA 300.0 Rev 2.1 1993	496024		
2622524015	Dup-02	EPA 300.0 Rev 2.1 1993	496032		
2622524016	FBL 082819-01	EPA 300.0 Rev 2.1 1993	496032		
2622524017	EQBL 082819-01	EPA 300.0 Rev 2.1 1993	496032		
2622524018	FBL 082819-02	EPA 300.0 Rev 2.1 1993	496032		
2622524019	EQBL 082819-02	EPA 300.0 Rev 2.1 1993	496032		

### REPORT OF LABORATORY ANALYSIS

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# CHAIN-OF-CUSTODY / Analytical Request Document

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

**Section A**  
**Required Client Information:**  
 Company: Georgia Power - Coal Combustion Residuals  
 Address: 2480 Manor Road  
 Atlanta, GA 30339  
 Email: jbraham@southernco.com  
 Phone: (404)506-7239  
 Requested Due Date:  
 Fax:  
 Report To: Jgtv Abraham  
 Copy To: Resolute  
 Purchase Order #: SCS10382775  
 Project Name: Plant Mckanus App. IV  
 Project #:  
**Section B**  
**Required Project Information:**  
 Attention: scsinvoices@southernco.com  
 Company Name:  
 Address:  
 Pace Quote:  
 Pace Project Manager: bely.mckanus@paceclabs.com.  
 Pace Profile #: 334.8.2  
**Section C**  
**Invoice Information:**  
 Invoice Number:  
 Invoice Date:

ITEM #	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	MATRIX CODE (see valid codes to left)	SAMPLE TEMP AT COLLECTION		PRESERVATIVES									ANALYSES (Y/N)			Requested Analysis Filtered (Y/N)
			START	END			DATE	TIME	H2SO4	HNO3	HCl	NaOH	Na2SO3	Methanol	Other	Fluoride by 300.0	Metals App. IV	Radium 226/228	Residual Chlorine (Y/N)		
																				DATE	
1		MCM-01			WT G	WT	9/27/A	0932	4	1	3							X	X	X	
2		MCM-02			WT G	WT	9/28/A	1333	4	1	3							X	X	X	
3		MCM-04			WT G	WT	9/27/A	1548	4	1	3							X	X	X	
4		MCM-05			WT G	WT	9/28/A	1315	6	1	5							X	X	X	
5		MCM-06			WT G	WT	9/29/A	1232	4	1	3							X	X	X	
6		MCM-07			WT G	WT	9/28/A	1032	4	1	3							X	X	X	
7		MCM-08			WT G	WT	9/29/A	1123	4	1	3							X	X	X	
8		MCM-11			WT G	WT	9/28/A	0935	4	1	3							X	X	X	
9		MCM-12			WT G	WT	9/27/A	1134	4	1	3							X	X	X	
10		MCM-14			WT G	WT	9/26/A	1552	6	1	5							X	X	X	
11		MCM-15			WT G	WT	9/27/A	1459	4	1	3							X	X	X	
12		MCM-16			WT G	WT	9/27/A	1148	4	1	3							X	X	X	

WO#: 2622524

**ADDITIONAL COMMENTS:**  
 Audrey Crafton  
 9/28/19 1100  
 FedEx  
 9/29/19 0900  
 1.5

**DELIVERED BY / AFFILIATION:** DATE: TIME: 9/28/19 1100

**ACCEPTED BY / AFFILIATION:** DATE: TIME: 9/29/19 0900

**SAMPLER NAME AND SIGNATURE:**  
 PRINT Name of SAMPLER: Veronica Fay, Joe Booth, Audrey Crafton  
 SIGNATURE of SAMPLER: Audrey Crafton  
 DATE Signed: 9/28/19

**RECEIVED ON:** TEMP in C: 1.5  
 Ice Received on: Y/N:  
 Custody Y/N:  
 Sealed Cooler Y/N:  
 Samples Intact Y/N:



# CHAIN-OF-CUSTODY / Analytical Request Document

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

**Section A** Required Client Information: Company: Georgia Power - Coal Combustion Residuals Address: 2480 Manor Road Atlanta, GA 30339 Email: jbraham@southernco.com Phone: (404)506-7239 Fax: Requested Due Date: \_\_\_\_\_

**Section B** Required Project Information: Report To: Joey Abraham Copy To: Reschuta Purchase Order #: SCS10382775 Project Name: Plant McManus App. IV Project #: \_\_\_\_\_

**Section C** Invoice Information: Attention: scservices@southernco.com Company Name: \_\_\_\_\_ Address: \_\_\_\_\_ Pace Quote: \_\_\_\_\_ Pace Project Manager: betty.mcdaniel@paceelabs.com, Requested Due Date: 334.8.2

Page: 2 of 2

Regulatory/Agency: \_\_\_\_\_ State/Location: GA

ITEM #	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	PRESERVATIVES										Fluoride by 300.0	Metals App. IV	Radium 226/228	Residual Chlorine (Y/N)
			START DATE	START TIME			END DATE	END TIME	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other					
1	MCIM-17	WIG	8/27/A	1300		4	1	3								X	X			
2	DWP-01	WIG	8/24/A			4	1	3								X	X			
3	DWP-02	WIG	8/28/A			4	1	3								X	X			
4	FBL 082819-01	WIG	8/28/A	1420		4	1	3								X	X			
5	EQBL 082819-01	WIG	8/28/A	1425		4	1	3								X	X			
6	FBL 082819-02	WIG	8/28/A	1520		4	1	3								X	X			
7	EQBL 082819-02	WIG	8/28/A	1525		4	1	3								X	X			

**WO#: 2622524**  
 PM: 8M Due Date: 09/06/19  
 CLIENT: GAPower-CCR

RECEIVED BY / VERIFICATION	DATE	TIME	RECEIVED BY / VERIFICATION	DATE	TIME	RECEIVED ON	TEMP IN C	Sealed	Cooler	Samples Intact
Audrey Crafton	8/28/A	1600	Fed Ex	8/28/A	1600					
			Madalman	8/29/19	0900		1.5	Y	Y	Y

**SAMPLER NAME AND SIGNATURE:**  
 PRINT Name of SAMPLER: Veronica Fay Joe Booth Audrey Crafton  
 SIGNATURE of SAMPLER: *Audrey Crafton* DATE Signed: 8/28/19





Sample Condition Upon Receipt

Client Name: GA Power

Project # \_\_\_\_\_

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Other \_\_\_\_\_

Tracking #: 7894 4529 6767

WO#: **2622524**

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

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

CLIENT: **GA Power-CCR**

Packing Material:  Bubble Wrap  Bubble Bags  None  Other \_\_\_\_\_

Thermometer Used 83

Type of Ice:  Wet  Blue  None

Samples on Ice, cooling process has begun

Cooler Temperature 1.5

Biological Tissue is Frozen: Yes No

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

Temp should be above freezing to 6°C

Comments:

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

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Project Manager Review: \_\_\_\_\_

Date: \_\_\_\_\_

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

September 24, 2019

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


RE: Project: Plant McManus APP. IV  
Pace Project No.: 2622528

Dear Joju Abraham:

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

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

Sincerely,



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

Enclosures

cc: Lauren Petty, Southern Company Services, Inc.  
Kevin Stephenson, Resolute Environmental & Water  
Resources Consulting, LLC  
Rebecca Thornton, Pace Analytical Atlanta  
Stephen Wilson, Resolute Environmental & Water  
Resources Consulting, LLC



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: Plant McManus APP. IV  
Pace Project No.: 2622528

---

### Pennsylvania Certification IDs

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

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

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Plant McManus APP. IV

Pace Project No.: 2622528

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622528001	MCM-01	Water	08/27/19 09:32	08/29/19 09:00
2622528002	MCM-02	Water	08/28/19 13:33	08/29/19 09:00
2622528003	MCM-04	Water	08/27/19 15:48	08/29/19 09:00
2622528004	MCM-05	Water	08/28/19 13:15	08/29/19 09:00
2622528005	MCM-06	Water	08/28/19 12:32	08/29/19 09:00
2622528006	MCM-07	Water	08/28/19 10:32	08/29/19 09:00
2622528007	MCM-08	Water	08/28/19 11:23	08/29/19 09:00
2622528008	MCM-11	Water	08/28/19 09:35	08/29/19 09:00
2622528009	MCM-12	Water	08/27/19 11:34	08/29/19 09:00
2622528010	MCM-14	Water	08/26/19 15:52	08/29/19 09:00
2622528011	MCM-15	Water	08/27/19 14:59	08/29/19 09:00
2622528012	MCM-16	Water	08/27/19 11:48	08/29/19 09:00
2622528013	MCM-17	Water	08/27/19 13:00	08/29/19 09:00
2622528014	Dup-01	Water	08/26/19 00:00	08/29/19 09:00
2622528015	Dup-02	Water	08/28/19 00:00	08/29/19 09:00
2622528016	FBL 082819-01	Water	08/28/19 14:20	08/29/19 09:00
2622528017	EQBL 082819-01	Water	08/28/19 14:25	08/29/19 09:00
2622528018	FBL 082819-02	Water	08/28/19 15:20	08/29/19 09:00
2622528019	EQBL 082819-02	Water	08/28/19 15:25	08/29/19 09:00

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Plant McManus APP. IV  
Pace Project No.: 2622528

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2622528001	MCM-01	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622528002	MCM-02	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622528003	MCM-04	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622528004	MCM-05	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622528005	MCM-06	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622528006	MCM-07	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622528007	MCM-08	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622528008	MCM-11	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622528009	MCM-12	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622528010	MCM-14	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622528011	MCM-15	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622528012	MCM-16	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622528013	MCM-17	EPA 9315	LAL	1	PASI-PA

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**SAMPLE ANALYTE COUNT**

Project: Plant McManus APP. IV

Pace Project No.: 2622528

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2622528014	Dup-01	EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
2622528015	Dup-02	Total Radium Calculation	CMC	1	PASI-PA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622528016	FBL 082819-01	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 9315	LAL	1	PASI-PA
2622528017	EQBL 082819-01	EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
2622528018	FBL 082819-02	Total Radium Calculation	CMC	1	PASI-PA
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622528019	EQBL 082819-02	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 9315	LAL	1	PASI-PA

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McManus APP. IV

Pace Project No.: 2622528

**Sample: MCM-01**      **Lab ID: 2622528001**      Collected: 08/27/19 09:32      Received: 08/29/19 09:00      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.463 ± 0.308 (0.476)</b> C:75% T:NA	pCi/L	09/13/19 11:01	13982-63-3	
Radium-228	EPA 9320	<b>0.739 ± 0.467 (0.891)</b> C:73% T:87%	pCi/L	09/19/19 11:34	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.20 ± 0.775 (1.37)</b>	pCi/L	09/24/19 10:28	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McManus APP. IV

Pace Project No.: 2622528

**Sample: MCM-02**      **Lab ID: 2622528002**      Collected: 08/28/19 13:33      Received: 08/29/19 09:00      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.444 ± 0.193 (0.239)</b> C:88% T:NA	pCi/L	09/16/19 20:09	13982-63-3	
Radium-228	EPA 9320	<b>0.235 ± 0.459 (1.01)</b> C:72% T:82%	pCi/L	09/19/19 14:37	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.679 ± 0.652 (1.25)</b>	pCi/L	09/24/19 12:59	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McManus APP. IV

Pace Project No.: 2622528

**Sample: MCM-04**      **Lab ID: 2622528003**      Collected: 08/27/19 15:48      Received: 08/29/19 09:00      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>3.17 ± 0.791 (0.437)</b> <b>C:82% T:NA</b>	pCi/L	09/13/19 09:43	13982-63-3	
Radium-228	EPA 9320	<b>1.23 ± 0.527 (0.838)</b> <b>C:73% T:76%</b>	pCi/L	09/19/19 11:35	15262-20-1	
Total Radium	Total Radium Calculation	<b>4.40 ± 1.32 (1.28)</b>	pCi/L	09/24/19 10:28	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McManus APP. IV

Pace Project No.: 2622528

**Sample: MCM-05**      **Lab ID: 2622528004**      Collected: 08/28/19 13:15      Received: 08/29/19 09:00      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>1.13 ± 0.485 (0.648)</b> C:85% T:NA	pCi/L	09/13/19 09:48	13982-63-3	
Radium-228	EPA 9320	<b>0.536 ± 0.438 (0.878)</b> C:79% T:79%	pCi/L	09/19/19 11:36	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.67 ± 0.923 (1.53)</b>	pCi/L	09/24/19 10:28	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McManus APP. IV

Pace Project No.: 2622528

**Sample: MCM-06**      **Lab ID: 2622528005**      Collected: 08/28/19 12:32      Received: 08/29/19 09:00      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>4.46 ± 0.818 (0.263)</b> C:79% T:NA	pCi/L	09/23/19 08:23	13982-63-3	
Radium-228	EPA 9320	<b>2.40 ± 0.772 (0.998)</b> C:73% T:66%	pCi/L	09/19/19 11:36	15262-20-1	
Total Radium	Total Radium Calculation	<b>6.86 ± 1.59 (1.26)</b>	pCi/L	09/24/19 10:28	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McManus APP. IV

Pace Project No.: 2622528

**Sample: MCM-07**      **Lab ID: 2622528006**      Collected: 08/28/19 10:32      Received: 08/29/19 09:00      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>4.15 ± 0.962 (0.628)</b> <b>C:85% T:NA</b>	pCi/L	09/13/19 09:44	13982-63-3	
Radium-228	EPA 9320	<b>4.58 ± 1.10 (0.947)</b> <b>C:71% T:78%</b>	pCi/L	09/19/19 11:35	15262-20-1	
Total Radium	Total Radium Calculation	<b>8.73 ± 2.06 (1.58)</b>	pCi/L	09/24/19 10:28	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McManus APP. IV

Pace Project No.: 2622528

**Sample: MCM-08**      **Lab ID: 2622528007**      Collected: 08/28/19 11:23      Received: 08/29/19 09:00      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>15.1 ± 2.36 (0.195)</b> <b>C:83% T:NA</b>	pCi/L	09/23/19 08:48	13982-63-3	
Radium-228	EPA 9320	<b>5.51 ± 1.28 (1.01)</b> <b>C:73% T:83%</b>	pCi/L	09/19/19 12:40	15262-20-1	
Total Radium	Total Radium Calculation	<b>20.6 ± 3.64 (1.21)</b>	pCi/L	09/24/19 10:28	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McManus APP. IV

Pace Project No.: 2622528

**Sample: MCM-11**      **Lab ID: 2622528008**      Collected: 08/28/19 09:35      Received: 08/29/19 09:00      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.358 ± 0.281 (0.498)</b> C:82% T:NA	pCi/L	09/13/19 09:43	13982-63-3	
Radium-228	EPA 9320	<b>0.0762 ± 0.353 (0.807)</b> C:71% T:82%	pCi/L	09/19/19 11:35	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.434 ± 0.634 (1.31)</b>	pCi/L	09/24/19 10:28	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McManus APP. IV

Pace Project No.: 2622528

**Sample: MCM-12**      **Lab ID: 2622528009**      Collected: 08/27/19 11:34      Received: 08/29/19 09:00      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>1.87 ± 0.687 (0.649)</b> C:55% T:NA	pCi/L	09/13/19 09:39	13982-63-3	
Radium-228	EPA 9320	<b>1.04 ± 0.573 (1.06)</b> C:72% T:81%	pCi/L	09/19/19 11:35	15262-20-1	
Total Radium	Total Radium Calculation	<b>2.91 ± 1.26 (1.71)</b>	pCi/L	09/24/19 10:28	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McManus APP. IV

Pace Project No.: 2622528

**Sample: MCM-14**      **Lab ID: 2622528010**      Collected: 08/26/19 15:52      Received: 08/29/19 09:00      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>3.85 ± 0.930 (0.417)</b> <b>C:73% T:NA</b>	pCi/L	09/13/19 11:01	13982-63-3	
Radium-228	EPA 9320	<b>3.83 ± 0.950 (0.829)</b> <b>C:70% T:83%</b>	pCi/L	09/19/19 11:34	15262-20-1	
Total Radium	Total Radium Calculation	<b>7.68 ± 1.88 (1.25)</b>	pCi/L	09/24/19 10:28	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McManus APP. IV

Pace Project No.: 2622528

**Sample: MCM-15**      **Lab ID: 2622528011**      Collected: 08/27/19 14:59      Received: 08/29/19 09:00      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>1.28 ± 0.500 (0.612)</b> <b>C:81% T:NA</b>	pCi/L	09/13/19 09:42	13982-63-3	
Radium-228	EPA 9320	<b>1.05 ± 0.594 (1.10)</b> <b>C:74% T:73%</b>	pCi/L	09/19/19 11:35	15262-20-1	
Total Radium	Total Radium Calculation	<b>2.33 ± 1.09 (1.71)</b>	pCi/L	09/24/19 10:28	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McManus APP. IV

Pace Project No.: 2622528

**Sample: MCM-16**      **Lab ID: 2622528012**      Collected: 08/27/19 11:48      Received: 08/29/19 09:00      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.664 ± 0.329 (0.361)</b> C:84% T:NA	pCi/L	09/13/19 11:20	13982-63-3	
Radium-228	EPA 9320	<b>0.361 ± 0.406 (0.853)</b> C:72% T:92%	pCi/L	09/19/19 11:35	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.03 ± 0.735 (1.21)</b>	pCi/L	09/24/19 10:28	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McManus APP. IV

Pace Project No.: 2622528

**Sample: MCM-17**      **Lab ID: 2622528013**      Collected: 08/27/19 13:00      Received: 08/29/19 09:00      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>3.67 ± 0.867 (0.407)</b> C:89% T:NA	pCi/L	09/13/19 09:39	13982-63-3	
Radium-228	EPA 9320	<b>2.15 ± 0.673 (0.896)</b> C:75% T:86%	pCi/L	09/19/19 11:35	15262-20-1	
Total Radium	Total Radium Calculation	<b>5.82 ± 1.54 (1.30)</b>	pCi/L	09/24/19 10:28	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McManus APP. IV

Pace Project No.: 2622528

**Sample: Dup-01**      **Lab ID: 2622528014**      Collected: 08/26/19 00:00      Received: 08/29/19 09:00      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>4.12 ± 1.03 (0.611)</b> <b>C:62% T:NA</b>	pCi/L	09/13/19 11:01	13982-63-3	
Radium-228	EPA 9320	<b>3.29 ± 0.858 (0.849)</b> <b>C:69% T:84%</b>	pCi/L	09/19/19 11:34	15262-20-1	
Total Radium	Total Radium Calculation	<b>7.41 ± 1.89 (1.46)</b>	pCi/L	09/24/19 10:28	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McManus APP. IV

Pace Project No.: 2622528

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.567 ± 0.353 (0.562)</b> C:77% T:NA	pCi/L	09/13/19 09:43	13982-63-3	
Radium-228	EPA 9320	<b>0.925 ± 0.445 (0.759)</b> C:77% T:86%	pCi/L	09/19/19 11:37	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.49 ± 0.798 (1.32)</b>	pCi/L	09/24/19 10:28	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McManus APP. IV

Pace Project No.: 2622528

**Sample: FBL 082819-01**      **Lab ID: 2622528016**      Collected: 08/28/19 14:20      Received: 08/29/19 09:00      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.296 ± 0.169 (0.263)</b> C:89% T:NA	pCi/L	09/16/19 20:09	13982-63-3	
Radium-228	EPA 9320	<b>0.0212 ± 0.389 (0.902)</b> C:76% T:77%	pCi/L	09/19/19 14:38	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.317 ± 0.558 (1.17)</b>	pCi/L	09/24/19 12:59	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McManus APP. IV

Pace Project No.: 2622528

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**Sample: EQBL 082819-01**      **Lab ID: 2622528017**      Collected: 08/28/19 14:25      Received: 08/29/19 09:00      Matrix: Water  
PWS:      Site ID:      Sample Type:

---

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.345 ± 0.179 (0.260)</b> C:90% T:NA	pCi/L	09/16/19 20:09	13982-63-3	
Radium-228	EPA 9320	<b>0.325 ± 0.568 (1.24)</b> C:71% T:81%	pCi/L	09/19/19 14:38	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.670 ± 0.747 (1.50)</b>	pCi/L	09/24/19 12:59	7440-14-4	

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McManus APP. IV

Pace Project No.: 2622528

**Sample: FBL 082819-02**      **Lab ID: 2622528018**      Collected: 08/28/19 15:20      Received: 08/29/19 09:00      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.159 ± 0.143 (0.264)</b> C:87% T:NA	pCi/L	09/16/19 20:09	13982-63-3	
Radium-228	EPA 9320	<b>0.200 ± 0.426 (0.943)</b> C:76% T:80%	pCi/L	09/19/19 14:38	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.359 ± 0.569 (1.21)</b>	pCi/L	09/24/19 12:59	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant McManus APP. IV

Pace Project No.: 2622528

**Sample: EQBL 082819-02**      **Lab ID: 2622528019**      Collected: 08/28/19 15:25      Received: 08/29/19 09:00      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.450 ± 0.203 (0.285)</b> C:91% T:NA	pCi/L	09/16/19 17:48	13982-63-3	
Radium-228	EPA 9320	<b>0.179 ± 0.425 (0.944)</b> C:77% T:79%	pCi/L	09/19/19 14:38	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.629 ± 0.628 (1.23)</b>	pCi/L	09/24/19 12:59	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant McManus APP. IV

Pace Project No.: 2622528

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QC Batch:	359959	Analysis Method:	EPA 9320
QC Batch Method:	EPA 9320	Analysis Description:	9320 Radium 228
Associated Lab Samples:	2622528001, 2622528003, 2622528004, 2622528005, 2622528006, 2622528007, 2622528008, 2622528009, 2622528010, 2622528011, 2622528012, 2622528013, 2622528014, 2622528015		

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METHOD BLANK:	1747376	Matrix:	Water
Associated Lab Samples:	2622528001, 2622528003, 2622528004, 2622528005, 2622528006, 2622528007, 2622528008, 2622528009, 2622528010, 2622528011, 2622528012, 2622528013, 2622528014, 2622528015		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.0495 ± 0.365 (0.863) C:80% T:75%	pCi/L	09/19/19 11:35	

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

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant McManus APP. IV

Pace Project No.: 2622528

QC Batch: 359960 Analysis Method: EPA 9315

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

Associated Lab Samples: 2622528002, 2622528016, 2622528017, 2622528018, 2622528019

METHOD BLANK: 1747379 Matrix: Water

Associated Lab Samples: 2622528002, 2622528016, 2622528017, 2622528018, 2622528019

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.192 ± 0.159 (0.292) C:91% T:NA	pCi/L	09/16/19 20:09	

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

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant McManus APP. IV

Pace Project No.: 2622528

QC Batch: 359961

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2622528002, 2622528016, 2622528017, 2622528018, 2622528019

METHOD BLANK: 1747380

Matrix: Water

Associated Lab Samples: 2622528002, 2622528016, 2622528017, 2622528018, 2622528019

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.232 ± 0.345 (0.742) C:77% T:84%	pCi/L	09/19/19 14:40	

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant McManus APP. IV

Pace Project No.: 2622528

QC Batch: 359958

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Associated Lab Samples: 2622528001, 2622528003, 2622528004, 2622528005, 2622528006, 2622528007, 2622528008, 2622528009, 2622528010, 2622528011, 2622528012, 2622528013, 2622528014, 2622528015

METHOD BLANK: 1747375

Matrix: Water

Associated Lab Samples: 2622528001, 2622528003, 2622528004, 2622528005, 2622528006, 2622528007, 2622528008, 2622528009, 2622528010, 2622528011, 2622528012, 2622528013, 2622528014, 2622528015

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.446 ± 0.266 (0.338) C:85% T:NA	pCi/L	09/13/19 11:01	

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

### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: Plant McManus APP. IV  
Pace Project No.: 2622528

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### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

### LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant McManus APP. IV  
Pace Project No.: 2622528

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622528001	MCM-01	EPA 9315	359958		
2622528002	MCM-02	EPA 9315	359960		
2622528003	MCM-04	EPA 9315	359958		
2622528004	MCM-05	EPA 9315	359958		
2622528005	MCM-06	EPA 9315	359958		
2622528006	MCM-07	EPA 9315	359958		
2622528007	MCM-08	EPA 9315	359958		
2622528008	MCM-11	EPA 9315	359958		
2622528009	MCM-12	EPA 9315	359958		
2622528010	MCM-14	EPA 9315	359958		
2622528011	MCM-15	EPA 9315	359958		
2622528012	MCM-16	EPA 9315	359958		
2622528013	MCM-17	EPA 9315	359958		
2622528014	Dup-01	EPA 9315	359958		
2622528015	Dup-02	EPA 9315	359958		
2622528016	FBL 082819-01	EPA 9315	359960		
2622528017	EQBL 082819-01	EPA 9315	359960		
2622528018	FBL 082819-02	EPA 9315	359960		
2622528019	EQBL 082819-02	EPA 9315	359960		
2622528001	MCM-01	EPA 9320	359959		
2622528002	MCM-02	EPA 9320	359961		
2622528003	MCM-04	EPA 9320	359959		
2622528004	MCM-05	EPA 9320	359959		
2622528005	MCM-06	EPA 9320	359959		
2622528006	MCM-07	EPA 9320	359959		
2622528007	MCM-08	EPA 9320	359959		
2622528008	MCM-11	EPA 9320	359959		
2622528009	MCM-12	EPA 9320	359959		
2622528010	MCM-14	EPA 9320	359959		
2622528011	MCM-15	EPA 9320	359959		
2622528012	MCM-16	EPA 9320	359959		
2622528013	MCM-17	EPA 9320	359959		
2622528014	Dup-01	EPA 9320	359959		
2622528015	Dup-02	EPA 9320	359959		
2622528016	FBL 082819-01	EPA 9320	359961		
2622528017	EQBL 082819-01	EPA 9320	359961		
2622528018	FBL 082819-02	EPA 9320	359961		
2622528019	EQBL 082819-02	EPA 9320	359961		
2622528001	MCM-01	Total Radium Calculation	362814		
2622528002	MCM-02	Total Radium Calculation	362865		
2622528003	MCM-04	Total Radium Calculation	362814		
2622528004	MCM-05	Total Radium Calculation	362814		
2622528005	MCM-06	Total Radium Calculation	362814		
2622528006	MCM-07	Total Radium Calculation	362814		

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant McManus APP. IV

Pace Project No.: 2622528

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622528007	MCM-08	Total Radium Calculation	362814		
2622528008	MCM-11	Total Radium Calculation	362814		
2622528009	MCM-12	Total Radium Calculation	362814		
2622528010	MCM-14	Total Radium Calculation	362814		
2622528011	MCM-15	Total Radium Calculation	362814		
2622528012	MCM-16	Total Radium Calculation	362814		
2622528013	MCM-17	Total Radium Calculation	362814		
2622528014	Dup-01	Total Radium Calculation	362814		
2622528015	Dup-02	Total Radium Calculation	362814		
2622528016	FBL 082819-01	Total Radium Calculation	362865		
2622528017	EQBL 082819-01	Total Radium Calculation	362865		
2622528018	FBL 082819-02	Total Radium Calculation	362865		
2622528019	EQBL 082819-02	Total Radium Calculation	362865		

### REPORT OF LABORATORY ANALYSIS

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# CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 1 of 2

<b>Section A</b>		<b>Section B</b>		<b>Section C</b>	
<b>Required Client Information:</b>		<b>Required Project Information:</b>		<b>Invoice Information:</b>	
Company: Georgia Power - Coal Combustion Residuals	Report To: Joji Abraham	Company Name: SCS10382775	Attention: scsinvoices@southernco.com	Company Name: Southermo.com	Address: 2480 Maner Road, Atlanta, GA 30339
Address: 2480 Maner Road, Atlanta, GA 30339	Copy To: Residuals	Purchase Order #: SCS10382775	Address: 2480 Maner Road, Atlanta, GA 30339	Project Name: Plant McManus App. IV	Pace Profile #: 334.8.2
Email: jabraham@southernco.com	Project #: 404306-7239	Project Name: Plant McManus App. IV	Pace Profile #: 334.8.2	Pace Quote: betsy.modane@pacelabs.com	Requested Due Date:
Phone: (404)306-7239	Fax:	Requested Due Date:	Requested Due Date:	Requested Due Date:	Requested Due Date:

ITEM #	MATRIX CODE (see valid codes to left)	MATRIX	COLLECTED		SAMPLE TYPE (G-RAB C-COMP)	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	UNPRESERVED	PRESERVATIVES								ANALYZED (Y/N)	Fluoride by 300.0	Metal App. IV	Radium 226/228	Residual Chlorine (Y/N)
			START DATE	END DATE					H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other						
1	MCM-01	Drinking Water	8/27/19	10:32	G		4	1	3							X	X	X			
2	MCM-02	Drinking Water	8/28/19	13:33	G		4	1	3							X	X	X			
3	MCM-04	Drinking Water	8/27/19	15:48	G		4	1	3							X	X	X			
4	MCM-05	Drinking Water	8/28/19	13:15	G		6	1	5							X	X	X			
5	MCM-06	Drinking Water	8/28/19	12:32	G		4	1	3							X	X	X			
6	MCM-07	Drinking Water	8/28/19	10:32	G		4	1	3							X	X	X			
7	MCM-08	Drinking Water	8/28/19	11:23	G		4	1	3							X	X	X			
8	MCM-11	Drinking Water	8/29/19	09:35	G		4	1	3							X	X	X			
9	MCM-12	Drinking Water	8/27/19	11:34	G		4	1	3							X	X	X			
10	MCM-14	Drinking Water	8/24/19	15:52	G		6	1	5							X	X	X			
11	MCM-15	Drinking Water	8/27/19	14:59	G		4	1	3							X	X	X			
12	MCM-16	Drinking Water	8/27/19	11:18	G		4	1	3							X	X	X			

WO#: 2622528



Requested By / Signature: Audrey Crafton	DATE: 8/28/19	TIME: 1600	Requested By / Signature: FedEx	DATE: 8/29/19	TIME: 1600
Requested By / Signature: Audrey Crafton	DATE: 8/28/19	TIME: 1600	Requested By / Signature: FedEx	DATE: 8/29/19	TIME: 0900
Requested By / Signature: Audrey Crafton	DATE: 8/28/19	TIME: 1600	Requested By / Signature: FedEx	DATE: 8/29/19	TIME: 0900
Requested By / Signature: Audrey Crafton	DATE: 8/28/19	TIME: 1600	Requested By / Signature: FedEx	DATE: 8/29/19	TIME: 0900
Requested By / Signature: Audrey Crafton	DATE: 8/28/19	TIME: 1600	Requested By / Signature: FedEx	DATE: 8/29/19	TIME: 0900
Requested By / Signature: Audrey Crafton	DATE: 8/28/19	TIME: 1600	Requested By / Signature: FedEx	DATE: 8/29/19	TIME: 0900
Requested By / Signature: Audrey Crafton	DATE: 8/28/19	TIME: 1600	Requested By / Signature: FedEx	DATE: 8/29/19	TIME: 0900
Requested By / Signature: Audrey Crafton	DATE: 8/28/19	TIME: 1600	Requested By / Signature: FedEx	DATE: 8/29/19	TIME: 0900
Requested By / Signature: Audrey Crafton	DATE: 8/28/19	TIME: 1600	Requested By / Signature: FedEx	DATE: 8/29/19	TIME: 0900
Requested By / Signature: Audrey Crafton	DATE: 8/28/19	TIME: 1600	Requested By / Signature: FedEx	DATE: 8/29/19	TIME: 0900
Requested By / Signature: Audrey Crafton	DATE: 8/28/19	TIME: 1600	Requested By / Signature: FedEx	DATE: 8/29/19	TIME: 0900

# CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 2 of 2

### Section A

**Required Client Information:**  
 Company: Georgia Power - Coal Combustion Residuals  
 Address: 2480 Warner Road  
 Atlanta, GA 30339  
 Email: jbrahams@southernco.com  
 Phone: (404) 506-7239 Fax  
 Project Name: Plant McManus App. IV  
 Project #:

### Section B

**Required Project Information:**  
 Report To: Jbu Abraham  
 Copy To: Resolute  
 Attention: scsinvoices@southernco.com  
 Company Name:  
 Address:  
 Purchase Order #: SCS10382775  
 Project Manager: betsy.mcdaniel@pacelabs.com.  
 Pace Profile #: 334.8.2

### Section C

**Invoice Information:**  
 Attention: scsinvoices@southernco.com  
 Company Name:  
 Address:  
 Pace Profile #: 334.8.2

ITEM #	MATRIX	CODE	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		# OF CONTAINERS	PRESERVATIVES										Fluoride by 300.0	Metals App. IV	Residual Chlorine (Y/N)	Received on	Ice (Y/N)	Sealed Custody (Y/N)	Cooler (Y/N)	Samples Intact (Y/N)											
						START DATE	START TIME		END DATE	END TIME	H2SO4	HNO3	HCl	NaOH	Na2SO3	Methanol	Other																				
1	Drinking Water	DW	MCM-17	WTG	G	8/27/A	1300			4	1	3																									
2	Waste Water	WW	DWP-01	WTG	G	8/29/A				4	1	3																									
3	Waste Water	WW	DWP-02	WTG	G	8/29/A				4	1	3																									
4	Product	P	FBL 082819-01	WTG	G	8/28/A	1420			4	1	3																									
5	Softened Oil	SO	EQBL 082819-01	WTG	G	8/28/A	1425			4	1	3																									
6	Wipe	WI	FBL 082819-02	WTG	G	8/28/A	1520			4	1	3																									
7	Air	AI	EQBL 082819-02	WTG	G	8/28/A	1525			4	1	3																									
8	Other	OT																																			
9	Tissue	TS																																			
10																																					
11																																					
12																																					

**WO#: 2622528**  
 PM: BM Due Date: 09/27/19  
 CLIENT: GAPower-CCR

8/28/A 1600  
 Fed Ex  
 8/29/A 1100  
 Madhman 8/29/19 0900  
 1.5 Y Y Y Y

PRINT Name of SAMPLER: Veronica Fay Joe Boehm Audrey Crafton  
 SIGNATURE of SAMPLER: *Audrey Crafton* DATE Signed: 8/28/19

Sample Condition Upon Receipt



Client Name: GIA Powere

Project # \_\_\_\_\_

WO#: **2622528**

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Other

Tracking #: 7894 4529 6767

PM: BM Due Date: 09/27/19

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

CLIENT: GAPower-CCR

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used 83

Type of Ice: Wet Blue None

Samples on ice, cooling process has begun

Cooler Temperature 1.5

Biological Tissue is Frozen: Yes No

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

Temp should be above freezing to 6°C

Comments:

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

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Project Manager Review: \_\_\_\_\_

Date: \_\_\_\_\_

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

December 11, 2019

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

RE: Project: Plant McManus App III & IV  
Pace Project No.: 2624541

Dear Joju Abraham:

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

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

Sincerely,



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

Enclosures

cc: Lea Millet, Resolute Environmental & Water Resources  
Lauren Petty, Southern Company Services, Inc.  
Kevin Stephenson, Resolute Environmental & Water  
Resources Consulting, LLC  
Rebecca Thornton, Pace Analytical Atlanta  
Stephen Wilson, Resolute Environmental & Water  
Resources Consulting, LLC



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: Plant McManus App III & IV  
Pace Project No.: 2624541

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### **Pace Analytical Services Atlanta**

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

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

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## SAMPLE SUMMARY

Project: Plant McManus App III & IV

Pace Project No.: 2624541

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624541001	MCM-04	Water	10/15/19 15:10	10/18/19 09:50
2624541002	MCM-12	Water	10/15/19 15:06	10/18/19 09:50
2624541003	MCM-14	Water	10/15/19 16:21	10/18/19 09:50
2624541004	MCM-15	Water	10/15/19 16:31	10/18/19 09:50
2624541005	FBL101519	Water	10/15/19 17:21	10/18/19 09:50
2624541006	EQBL101519	Water	10/15/19 17:26	10/18/19 09:50
2624541007	DUP-1	Water	10/15/19 00:00	10/18/19 09:50

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### SAMPLE ANALYTE COUNT

Project: Plant McManus App III & IV  
Pace Project No.: 2624541

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2624541001	MCM-04	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2624541002	MCM-12	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2624541003	MCM-14	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2624541004	MCM-15	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2624541005	FBL101519	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2624541006	EQBL101519	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2624541007	DUP-1	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	ALW	1
		EPA 300.0	MWB	3

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## ANALYTICAL RESULTS

Project: Plant McManus App III & IV  
Pace Project No.: 2624541

Sample: <b>MCM-04</b>		Lab ID: <b>2624541001</b>		Collected: 10/15/19 15:10		Received: 10/18/19 09:50		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	10/22/19 14:30	10/29/19 10:39	7440-36-0	
Arsenic	<b>0.0038J</b>	mg/L	0.0050	0.00035	1	10/22/19 14:30	10/29/19 10:39	7440-38-2	
Barium	<b>0.082</b>	mg/L	0.010	0.00049	1	10/22/19 14:30	10/29/19 10:39	7440-39-3	
Beryllium	<b>0.00035J</b>	mg/L	0.0030	0.000074	1	10/22/19 14:30	10/29/19 10:39	7440-41-7	
Boron	<b>0.068</b>	mg/L	0.040	0.0049	1	10/22/19 14:30	10/29/19 10:39	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	10/22/19 14:30	10/29/19 10:39	7440-43-9	
Calcium	<b>15.5</b>	mg/L	5.0	0.55	50	10/22/19 14:30	10/24/19 18:10	7440-70-2	
Chromium	<b>0.0012J</b>	mg/L	0.010	0.00039	1	10/22/19 14:30	10/29/19 10:39	7440-47-3	
Cobalt	<b>0.0085</b>	mg/L	0.0050	0.00030	1	10/22/19 14:30	10/29/19 10:39	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	10/22/19 14:30	10/29/19 10:39	7439-92-1	
Lithium	<b>0.0019J</b>	mg/L	0.030	0.00078	1	10/22/19 14:30	10/29/19 10:39	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	10/22/19 14:30	10/29/19 10:39	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	10/22/19 14:30	10/29/19 10:39	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	10/22/19 14:30	10/29/19 10:39	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	10/23/19 11:09	10/24/19 12:22	7439-97-6	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>237</b>	mg/L	10.0	10.0	1		10/22/19 13:12		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>46.0</b>	mg/L	1.0	0.024	1		10/25/19 17:22	16887-00-6	
Fluoride	<b>0.095J</b>	mg/L	0.30	0.029	1		10/25/19 17:22	16984-48-8	
Sulfate	<b>105</b>	mg/L	10.0	0.17	10		10/25/19 22:12	14808-79-8	

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### ANALYTICAL RESULTS

Project: Plant McManus App III & IV  
Pace Project No.: 2624541

Sample: MCM-12		Lab ID: 2624541002		Collected: 10/15/19 15:06		Received: 10/18/19 09:50		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	10/22/19 14:30	10/24/19 18:16	7440-36-0	
Arsenic	<b>0.0024J</b>	mg/L	0.0050	0.00035	1	10/22/19 14:30	10/24/19 18:16	7440-38-2	B
Barium	<b>0.14</b>	mg/L	0.010	0.00049	1	10/22/19 14:30	10/24/19 18:16	7440-39-3	
Beryllium	<b>0.00079J</b>	mg/L	0.0030	0.000074	1	10/22/19 14:30	10/24/19 18:16	7440-41-7	
Boron	<b>1.1</b>	mg/L	0.040	0.0049	1	10/22/19 14:30	10/24/19 18:16	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	10/22/19 14:30	10/24/19 18:16	7440-43-9	
Calcium	<b>7.9</b>	mg/L	0.10	0.011	1	10/22/19 14:30	10/24/19 18:16	7440-70-2	
Chromium	<b>0.0057J</b>	mg/L	0.010	0.00039	1	10/22/19 14:30	10/24/19 18:16	7440-47-3	
Cobalt	<b>0.00054J</b>	mg/L	0.0050	0.00030	1	10/22/19 14:30	10/24/19 18:16	7440-48-4	
Lead	<b>0.000056J</b>	mg/L	0.0050	0.000046	1	10/22/19 14:30	10/24/19 18:16	7439-92-1	
Lithium	<b>0.012J</b>	mg/L	0.030	0.00078	1	10/22/19 14:30	10/24/19 18:16	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	10/22/19 14:30	10/24/19 18:16	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	10/22/19 14:30	10/24/19 18:16	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	10/22/19 14:30	10/24/19 18:16	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	10/23/19 11:09	10/24/19 12:31	7439-97-6	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>1730</b>	mg/L	10.0	10.0	1		10/22/19 13:13		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>744</b>	mg/L	100	2.4	100		10/25/19 22:34	16887-00-6	
Fluoride	<b>1.0</b>	mg/L	0.30	0.029	1		10/25/19 17:44	16984-48-8	
Sulfate	<b>0.54J</b>	mg/L	1.0	0.017	1		10/25/19 17:44	14808-79-8	

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## ANALYTICAL RESULTS

Project: Plant McManus App III & IV  
Pace Project No.: 2624541

Sample: MCM-14		Lab ID: 2624541003		Collected: 10/15/19 16:21		Received: 10/18/19 09:50		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.015	0.0014	5	10/22/19 14:30	10/29/19 10:45	7440-36-0	D3
Arsenic	<b>0.0067</b>	mg/L	0.0050	0.00035	1	10/22/19 14:30	10/24/19 18:27	7440-38-2	B
Barium	<b>0.12</b>	mg/L	0.050	0.0024	5	10/22/19 14:30	10/29/19 10:45	7440-39-3	D3
Beryllium	ND	mg/L	0.0030	0.000074	1	10/22/19 14:30	10/24/19 18:27	7440-41-7	
Boron	<b>1.0</b>	mg/L	0.040	0.0049	1	10/22/19 14:30	10/24/19 18:27	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	10/22/19 14:30	10/24/19 18:27	7440-43-9	
Calcium	<b>321</b>	mg/L	5.0	0.55	50	10/22/19 14:30	10/24/19 18:33	7440-70-2	
Chromium	<b>0.00076J</b>	mg/L	0.010	0.00039	1	10/22/19 14:30	10/24/19 18:27	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	10/22/19 14:30	10/24/19 18:27	7440-48-4	
Lead	ND	mg/L	0.025	0.00023	5	10/22/19 14:30	10/29/19 10:45	7439-92-1	D3
Lithium	<b>0.056J</b>	mg/L	0.15	0.0039	5	10/22/19 14:30	10/29/19 10:45	7439-93-2	
Molybdenum	ND	mg/L	0.050	0.0047	5	10/22/19 14:30	10/29/19 10:45	7439-98-7	D3
Selenium	<b>0.0030J</b>	mg/L	0.010	0.0013	1	10/22/19 14:30	10/24/19 18:27	7782-49-2	
Thallium	ND	mg/L	0.0050	0.00026	5	10/22/19 14:30	10/29/19 10:45	7440-28-0	D3
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	10/23/19 11:09	10/24/19 12:34	7439-97-6	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>15400</b>	mg/L	10.0	10.0	1		10/22/19 13:13		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>9050</b>	mg/L	1000	24.0	1000		10/29/19 20:28	16887-00-6	
Fluoride	ND	mg/L	0.30	0.029	1		10/25/19 18:07	16984-48-8	
Sulfate	ND	mg/L	1.0	0.017	1		10/25/19 18:07	14808-79-8	

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## ANALYTICAL RESULTS

Project: Plant McManus App III & IV  
Pace Project No.: 2624541

Sample: <b>MCM-15</b>		Lab ID: <b>2624541004</b>		Collected: 10/15/19 16:31		Received: 10/18/19 09:50		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	10/22/19 14:30	10/24/19 18:39	7440-36-0	
Arsenic	<b>0.0038J</b>	mg/L	0.0050	0.00035	1	10/22/19 14:30	10/24/19 18:39	7440-38-2	B
Barium	<b>0.041</b>	mg/L	0.010	0.00049	1	10/22/19 14:30	10/24/19 18:39	7440-39-3	
Beryllium	<b>0.00034J</b>	mg/L	0.0030	0.000074	1	10/22/19 14:30	10/24/19 18:39	7440-41-7	
Boron	<b>0.046</b>	mg/L	0.040	0.0049	1	10/22/19 14:30	10/24/19 18:39	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	10/22/19 14:30	10/24/19 18:39	7440-43-9	
Calcium	<b>6.7</b>	mg/L	0.10	0.011	1	10/22/19 14:30	10/24/19 18:39	7440-70-2	
Chromium	<b>0.0026J</b>	mg/L	0.010	0.00039	1	10/22/19 14:30	10/24/19 18:39	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	10/22/19 14:30	10/24/19 18:39	7440-48-4	
Lead	<b>0.00038J</b>	mg/L	0.0050	0.000046	1	10/22/19 14:30	10/24/19 18:39	7439-92-1	
Lithium	<b>0.0016J</b>	mg/L	0.030	0.00078	1	10/22/19 14:30	10/24/19 18:39	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	10/22/19 14:30	10/24/19 18:39	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	10/22/19 14:30	10/24/19 18:39	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	10/22/19 14:30	10/24/19 18:39	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	10/23/19 11:09	10/24/19 12:36	7439-97-6	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>107</b>	mg/L	10.0	10.0	1		10/22/19 13:13		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>17.1</b>	mg/L	1.0	0.024	1		10/25/19 19:58	16887-00-6	
Fluoride	<b>0.14J</b>	mg/L	0.30	0.029	1		10/25/19 19:58	16984-48-8	
Sulfate	<b>17.9</b>	mg/L	1.0	0.017	1		10/25/19 19:58	14808-79-8	

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### ANALYTICAL RESULTS

Project: Plant McManus App III & IV  
Pace Project No.: 2624541

Sample: <b>FBL101519</b>		Lab ID: <b>2624541005</b>		Collected: 10/15/19 17:21	Received: 10/18/19 09:50	Matrix: Water				
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	10/22/19 14:30	10/24/19 19:02	7440-36-0		
Arsenic	<b>0.0024J</b>	mg/L	0.0050	0.00035	1	10/22/19 14:30	10/24/19 19:02	7440-38-2	B	
Barium	ND	mg/L	0.010	0.00049	1	10/22/19 14:30	10/24/19 19:02	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	10/22/19 14:30	10/24/19 19:02	7440-41-7		
Boron	ND	mg/L	0.040	0.0049	1	10/22/19 14:30	10/24/19 19:02	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	10/22/19 14:30	10/24/19 19:02	7440-43-9		
Calcium	<b>0.015J</b>	mg/L	0.10	0.011	1	10/22/19 14:30	10/24/19 19:02	7440-70-2		
Chromium	ND	mg/L	0.010	0.00039	1	10/22/19 14:30	10/24/19 19:02	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	10/22/19 14:30	10/24/19 19:02	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	10/22/19 14:30	10/24/19 19:02	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	10/22/19 14:30	10/24/19 19:02	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	10/22/19 14:30	10/24/19 19:02	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	10/22/19 14:30	10/24/19 19:02	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	10/22/19 14:30	10/24/19 19:02	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	10/23/19 11:09	10/24/19 12:43	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	ND	mg/L	10.0	10.0	1		10/22/19 13:13			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>0.051J</b>	mg/L	1.0	0.024	1		10/25/19 20:21	16887-00-6	B	
Fluoride	<b>0.033J</b>	mg/L	0.30	0.029	1		10/25/19 20:21	16984-48-8		
Sulfate	<b>0.019J</b>	mg/L	1.0	0.017	1		10/25/19 20:21	14808-79-8	B	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: Plant McManus App III & IV  
Pace Project No.: 2624541

Sample: EQBL101519		Lab ID: 2624541006		Collected: 10/15/19 17:26		Received: 10/18/19 09:50		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	10/22/19 14:30	10/24/19 19:08	7440-36-0	
Arsenic	<b>0.0022J</b>	mg/L	0.0050	0.00035	1	10/22/19 14:30	10/24/19 19:08	7440-38-2	B
Barium	ND	mg/L	0.010	0.00049	1	10/22/19 14:30	10/24/19 19:08	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	10/22/19 14:30	10/24/19 19:08	7440-41-7	
Boron	ND	mg/L	0.040	0.0049	1	10/22/19 14:30	10/24/19 19:08	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	10/22/19 14:30	10/24/19 19:08	7440-43-9	
Calcium	<b>0.025J</b>	mg/L	0.10	0.011	1	10/22/19 14:30	10/24/19 19:08	7440-70-2	
Chromium	ND	mg/L	0.010	0.00039	1	10/22/19 14:30	10/24/19 19:08	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	10/22/19 14:30	10/24/19 19:08	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	10/22/19 14:30	10/24/19 19:08	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	10/22/19 14:30	10/24/19 19:08	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	10/22/19 14:30	10/24/19 19:08	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	10/22/19 14:30	10/24/19 19:08	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	10/22/19 14:30	10/24/19 19:08	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	10/23/19 11:09	10/24/19 12:45	7439-97-6	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	ND	mg/L	10.0	10.0	1		10/22/19 13:13		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>1.9</b>	mg/L	1.0	0.024	1		10/25/19 20:43	16887-00-6	M1
Fluoride	ND	mg/L	0.30	0.029	1		10/25/19 20:43	16984-48-8	M1
Sulfate	<b>0.33J</b>	mg/L	1.0	0.017	1		10/25/19 20:43	14808-79-8	B,M1

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: Plant McManus App III & IV  
Pace Project No.: 2624541

Sample: DUP-1		Lab ID: 2624541007		Collected: 10/15/19 00:00		Received: 10/18/19 09:50		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.015	0.0014	5	10/22/19 14:30	10/29/19 10:50	7440-36-0	D3
Arsenic	<b>0.0062</b>	mg/L	0.0050	0.00035	1	10/22/19 14:30	10/24/19 19:13	7440-38-2	B
Barium	<b>0.11</b>	mg/L	0.050	0.0024	5	10/22/19 14:30	10/29/19 10:50	7440-39-3	D3
Beryllium	ND	mg/L	0.0030	0.000074	1	10/22/19 14:30	10/24/19 19:13	7440-41-7	
Boron	<b>1.0</b>	mg/L	0.040	0.0049	1	10/22/19 14:30	10/24/19 19:13	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	10/22/19 14:30	10/24/19 19:13	7440-43-9	
Calcium	<b>319</b>	mg/L	5.0	0.55	50	10/22/19 14:30	10/24/19 19:19	7440-70-2	
Chromium	<b>0.00092J</b>	mg/L	0.010	0.00039	1	10/22/19 14:30	10/24/19 19:13	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	10/22/19 14:30	10/24/19 19:13	7440-48-4	
Lead	ND	mg/L	0.025	0.00023	5	10/22/19 14:30	10/29/19 10:50	7439-92-1	D3
Lithium	<b>0.051</b>	mg/L	0.030	0.00078	1	10/22/19 14:30	10/24/19 19:13	7439-93-2	
Molybdenum	ND	mg/L	0.050	0.0047	5	10/22/19 14:30	10/29/19 10:50	7439-98-7	D3
Selenium	<b>0.0032J</b>	mg/L	0.010	0.0013	1	10/22/19 14:30	10/24/19 19:13	7782-49-2	
Thallium	ND	mg/L	0.0050	0.00026	5	10/22/19 14:30	10/29/19 10:50	7440-28-0	D3
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	10/23/19 11:09	10/24/19 12:48	7439-97-6	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>15500</b>	mg/L	10.0	10.0	1		10/22/19 13:13		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>7640</b>	mg/L	200	4.8	200		10/28/19 22:08	16887-00-6	
Fluoride	ND	mg/L	0.30	0.029	1		10/25/19 21:27	16984-48-8	
Sulfate	ND	mg/L	1.0	0.017	1		10/25/19 21:27	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant McManus App III & IV

Pace Project No.: 2624541

QC Batch: 37395 Analysis Method: EPA 7470A  
 QC Batch Method: EPA 7470A Analysis Description: 7470 Mercury  
 Associated Lab Samples: 2624541001, 2624541002, 2624541003, 2624541004, 2624541005, 2624541006, 2624541007

METHOD BLANK: 169178 Matrix: Water  
 Associated Lab Samples: 2624541001, 2624541002, 2624541003, 2624541004, 2624541005, 2624541006, 2624541007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	10/24/19 12:17	

LABORATORY CONTROL SAMPLE: 169179

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0025	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 169180 169181

Parameter	Units	2624541001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.0025	0.0025	0.0025	0.0026	101	103	75-125	2	20	

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### QUALITY CONTROL DATA

Project: Plant McManus App III & IV  
Pace Project No.: 2624541

QC Batch: 37347 Analysis Method: EPA 6020B  
QC Batch Method: EPA 3005A Analysis Description: 6020B MET  
Associated Lab Samples: 2624541001, 2624541002, 2624541003, 2624541004, 2624541005, 2624541006, 2624541007

METHOD BLANK: 168971 Matrix: Water  
Associated Lab Samples: 2624541001, 2624541002, 2624541003, 2624541004, 2624541005, 2624541006, 2624541007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	10/24/19 16:36	
Arsenic	mg/L	0.0010J	0.0050	0.00035	10/24/19 16:36	
Barium	mg/L	ND	0.010	0.00049	10/24/19 16:36	
Beryllium	mg/L	ND	0.0030	0.000074	10/24/19 16:36	
Boron	mg/L	ND	0.040	0.0049	10/24/19 16:36	
Cadmium	mg/L	ND	0.0025	0.00011	10/24/19 16:36	
Calcium	mg/L	ND	0.10	0.011	10/24/19 16:36	
Chromium	mg/L	ND	0.010	0.00039	10/24/19 16:36	
Cobalt	mg/L	ND	0.0050	0.00030	10/24/19 16:36	
Lead	mg/L	ND	0.0050	0.000046	10/24/19 16:36	
Lithium	mg/L	ND	0.030	0.00078	10/24/19 16:36	
Molybdenum	mg/L	ND	0.010	0.00095	10/24/19 16:36	
Selenium	mg/L	ND	0.010	0.0013	10/24/19 16:36	
Thallium	mg/L	ND	0.0010	0.000052	10/24/19 16:36	

LABORATORY CONTROL SAMPLE: 168972

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.10	100	80-120	
Arsenic	mg/L	0.1	0.098	98	80-120	
Barium	mg/L	0.1	0.10	101	80-120	
Beryllium	mg/L	0.1	0.11	108	80-120	
Boron	mg/L	1	1.1	107	80-120	
Cadmium	mg/L	0.1	0.097	97	80-120	
Calcium	mg/L	1	1.0	101	80-120	
Chromium	mg/L	0.1	0.10	102	80-120	
Cobalt	mg/L	0.1	0.098	98	80-120	
Lead	mg/L	0.1	0.098	98	80-120	
Lithium	mg/L	0.1	0.11	108	80-120	
Molybdenum	mg/L	0.1	0.10	102	80-120	
Selenium	mg/L	0.1	0.097	97	80-120	
Thallium	mg/L	0.1	0.10	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 168973 168974

Parameter	Units	2624496002 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	Spike Conc.	MSD Result						
Antimony	mg/L	ND	0.1	0.1	0.10	0.098	100	98	75-125	2	20	

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### QUALITY CONTROL DATA

Project: Plant McManus App III & IV

Pace Project No.: 2624541

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 168973		168974		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		2624496002 Result	MS Spike Conc.	MSD Spike Conc.									
Arsenic	mg/L	0.023	0.1	0.1	0.12	0.12	99	96	75-125	3	20		
Barium	mg/L	0.10	0.1	0.1	0.22	0.21	111	106	75-125	3	20		
Beryllium	mg/L	ND	0.1	0.1	0.11	0.11	113	110	75-125	3	20		
Boron	mg/L	0.38	1	1	1.5	1.5	109	109	75-125	0	20		
Cadmium	mg/L	0.00017J	0.1	0.1	0.099	0.097	99	97	75-125	2	20		
Calcium	mg/L	16.2	1	1	17.3	17.0	113	77	75-125	2	20		
Chromium	mg/L	ND	0.1	0.1	0.10	0.10	102	100	75-125	2	20		
Cobalt	mg/L	ND	0.1	0.1	0.097	0.097	97	97	75-125	0	20		
Lead	mg/L	ND	0.1	0.1	0.099	0.097	99	97	75-125	2	20		
Lithium	mg/L	0.0032J	0.1	0.1	0.11	0.11	111	107	75-125	4	20		
Molybdenum	mg/L	0.010	0.1	0.1	0.11	0.11	104	101	75-125	2	20		
Selenium	mg/L	ND	0.1	0.1	0.095	0.093	95	93	75-125	2	20		
Thallium	mg/L	ND	0.1	0.1	0.10	0.098	101	98	75-125	3	20		

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### QUALITY CONTROL DATA

Project: Plant McManus App III & IV

Pace Project No.: 2624541

QC Batch: 37331 Analysis Method: SM 2540C  
 QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids  
 Associated Lab Samples: 2624541001, 2624541002, 2624541003, 2624541004, 2624541005, 2624541006, 2624541007

LABORATORY CONTROL SAMPLE: 168856

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	399	100	84-108	

SAMPLE DUPLICATE: 168857

Parameter	Units	2624541001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	237	249	5	10	

SAMPLE DUPLICATE: 168858

Parameter	Units	2624432004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	67.0	69.0	3	10	

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### QUALITY CONTROL DATA

Project: Plant McManus App III & IV

Pace Project No.: 2624541

QC Batch: 37508 Analysis Method: EPA 300.0  
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
 Associated Lab Samples: 2624541001, 2624541002, 2624541003, 2624541004, 2624541005, 2624541006, 2624541007

METHOD BLANK: 170018 Matrix: Water  
 Associated Lab Samples: 2624541001, 2624541002, 2624541003, 2624541004, 2624541005, 2624541006, 2624541007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.034J	1.0	0.024	10/25/19 14:24	
Fluoride	mg/L	ND	0.30	0.029	10/25/19 14:24	
Sulfate	mg/L	0.033J	1.0	0.017	10/25/19 14:24	

LABORATORY CONTROL SAMPLE: 170019

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	10	10.5	105	90-110	
Fluoride	mg/L	10	10.9	109	90-110	
Sulfate	mg/L	10	10.6	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 170020 170021

Parameter	Units	2624506001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	5.6	20	20	24.6	21.5	95	79	90-110	14	15	M1
Fluoride	mg/L	0.62	20	20	18.7	19.5	91	94	90-110	4	15	
Sulfate	mg/L	ND	20	20	ND	ND	0	0	90-110		15	M1

MATRIX SPIKE SAMPLE: 170022

Parameter	Units	2624541006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	1.9	10	10.2	83	90-110	M1
Fluoride	mg/L	ND	10	10.7	106	90-110	
Sulfate	mg/L	0.33J	10	10.5	102	90-110	

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## QUALIFIERS

Project: Plant McManus App III & IV

Pace Project No.: 2624541

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### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

### ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

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

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant McManus App III & IV  
Pace Project No.: 2624541

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624541001	MCM-04	EPA 3005A	37347	EPA 6020B	37377
2624541002	MCM-12	EPA 3005A	37347	EPA 6020B	37377
2624541003	MCM-14	EPA 3005A	37347	EPA 6020B	37377
2624541004	MCM-15	EPA 3005A	37347	EPA 6020B	37377
2624541005	FBL101519	EPA 3005A	37347	EPA 6020B	37377
2624541006	EQBL101519	EPA 3005A	37347	EPA 6020B	37377
2624541007	DUP-1	EPA 3005A	37347	EPA 6020B	37377
2624541001	MCM-04	EPA 7470A	37395	EPA 7470A	37466
2624541002	MCM-12	EPA 7470A	37395	EPA 7470A	37466
2624541003	MCM-14	EPA 7470A	37395	EPA 7470A	37466
2624541004	MCM-15	EPA 7470A	37395	EPA 7470A	37466
2624541005	FBL101519	EPA 7470A	37395	EPA 7470A	37466
2624541006	EQBL101519	EPA 7470A	37395	EPA 7470A	37466
2624541007	DUP-1	EPA 7470A	37395	EPA 7470A	37466
2624541001	MCM-04	SM 2540C	37331		
2624541002	MCM-12	SM 2540C	37331		
2624541003	MCM-14	SM 2540C	37331		
2624541004	MCM-15	SM 2540C	37331		
2624541005	FBL101519	SM 2540C	37331		
2624541006	EQBL101519	SM 2540C	37331		
2624541007	DUP-1	SM 2540C	37331		
2624541001	MCM-04	EPA 300.0	37508		
2624541002	MCM-12	EPA 300.0	37508		
2624541003	MCM-14	EPA 300.0	37508		
2624541004	MCM-15	EPA 300.0	37508		
2624541005	FBL101519	EPA 300.0	37508		
2624541006	EQBL101519	EPA 300.0	37508		
2624541007	DUP-1	EPA 300.0	37508		

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W0# : 2624541



W0# : 2624542



**CHAIN-OF-CUSTODY / Analytical Request**  
The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields

<b>Section A</b>		<b>Section B</b>		<b>Section C</b>	
<b>Required Client Information:</b>		<b>Required Project Information:</b>		<b>Invoice Information:</b>	
Company: Georgia Power - Coal Combustion Residuals	Report To: Joju Abraham	Attention: scsvoices@southernco.com	Company Name:	Company Name:	
Address: 2480 Maner Road	Copy To: Lauren Petty, Resolute	Address:	Address:	Address:	
Allanta, GA 30339			Pace Quote:	Pace Quote:	
Email: jabraham@southernco.com	Purchase Order #: SCS10382775	Pace Project Manager: betsy.mcdaniel@pacelabs.com	Pace Profile #:	Pace Profile #:	
Phone: (404)506-7239	Project Name: Plant McManus App. III & IV				
Requested Due Date:	Project #:				

ITEM	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	MATRIX CODE (see valid codes to left)	# OF CONTAINERS	PRESERVATIVES		ANALYSES TEST	Requested Analysis Filtered (Y/N)	TEMP IN C	SAMPLE CONDITIONS
			START	END				UNPRESERVED	H2SO4				
			DATE	TIME						Y/N		DATE	TIME
1	MCM-04	WT G	10/15/19	1510			5	2		X	X	10/17/19	1200
2	MCM-12	WT G	10/15/19	1506			5	2		X	X	10/17/19	1200
3	MCM-14	WT G	10/15/19	1621			7	2	5	X	X	10/18	9:30
4	MCM-15	WT G	10/15/19	1631			5	2	3	X	X		
5	FBLD1519	WT G	10/15/19	1721			5	2	3	X	X		
6	FQBL101519	WT G	10/15/19	1726			5	2	3	X	X		
7	DUP-I	WT G	10/15/19				5	2	3	X	X		
8													
9													
10													
11													
12													

<b>ADDITIONAL COMMENTS</b>		<b>RELINQUISHED BY / AFFILIATION</b>		<b>ACCEPTED BY / AFFILIATION</b>	
Metals App III & IV - EPA 6010/6020		Kejoivic / Veronica Fay		FedEx	
TDS - SM 254DC				PMSL / RACE	
Radium 226 & 228 EPA 9315 & 9320					
Anions - EPA 300					
Mercury - EPA 7470					
Betsy McDaniel has list of parameters for App III & IV.					
<b>SAMPLER NAME AND SIGNATURE</b>		<b>PRINT Name of SAMPLER:</b>		<b>DATE Signed:</b>	
Joe Booth & Veronica Fay		Joe Booth & Veronica Fay		10/25/19	
<b>SIGNATURE of SAMPLER:</b>		<b>DATE Signed:</b>			
Betsy McDaniel		10/25/19			



Sample Condition Upon Receipt

WO# : 2624541
PM: BM Due Date: 10/25/19
CLIENT: GAPower-CCR

Client Name: \_\_\_\_\_

WO# : 2624542
PM: BM Due Date: 11/15/19
CLIENT: GAPower-CCR

Courier: [ ] Fed Ex [ ] UPS [ ] USPS [ ] Client [ ] Commercial [ ] Pace Other
Tracking #: \_\_\_\_\_

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

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

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

Cooler Temperature 4.6
Temp should be above freezing to 6°C

Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: \_\_\_\_\_

Table with 16 rows and 3 columns: Question, Yes/No/N/A checkboxes, and Numbered comments. Includes items like Chain of Custody Present, Samples Arrived within Hold Time, etc.

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

Project Manager Review: \_\_\_\_\_ Date: \_\_\_\_\_

November 15, 2019

Mr. Joju Abraham  
Georgia Power  
2480 Maner Road  
Atlanta, GA 30339

RE: Project: 2624542PlantMcmanus App III&IV  
Pace Project No.: 30331305

Dear Mr. Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on October 22, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Jacquelyn Collins  
jacquelyn.collins@pacelabs.com  
(724)850-5612  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: 2624542PlantMcmanus App III&IV  
Pace Project No.: 30331305

### Pennsylvania Certification IDs

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

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

## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 2624542PlantMcmanus App III&IV  
Pace Project No.: 30331305

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624542001	MCM-04	Water	10/15/19 15:10	10/22/19 09:30
2624542002	MCM-12	Water	10/15/19 15:06	10/22/19 09:30
2624542003	MCM-14	Water	10/15/19 16:21	10/22/19 09:30
2624542004	MCM-15	Water	10/15/19 16:31	10/22/19 09:30
2624542005	FBL101519	Water	10/15/19 17:21	10/22/19 09:30
2624542006	EQBL101519	Water	10/15/19 17:26	10/22/19 09:30
2624542007	DUP-1	Water	10/15/19 00:01	10/22/19 09:30

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 2624542PlantMcmanus App III&IV  
Pace Project No.: 30331305

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2624542001	MCM-04	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624542002	MCM-12	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624542003	MCM-14	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624542004	MCM-15	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624542005	FBL101519	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624542006	EQBL101519	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624542007	DUP-1	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2624542PlantMcmamus App III&IV  
Pace Project No.: 30331305

Sample: MCM-04		Lab ID: 2624542001	Collected: 10/15/19 15:10	Received: 10/22/19 09:30	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>3.03 ± 0.753 (0.446)</b> C:91% T:NA	pCi/L	11/07/19 07:22	13982-63-3	
Radium-228	EPA 9320	<b>1.89 ± 0.832 (1.42)</b> C:85% T:81%	pCi/L	11/08/19 20:30	15262-20-1	
Total Radium	Total Radium Calculation	<b>4.92 ± 1.59 (1.87)</b>	pCi/L	11/13/19 14:00	7440-14-4	

Sample: MCM-12		Lab ID: 2624542002	Collected: 10/15/19 15:06	Received: 10/22/19 09:30	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>1.98 ± 0.609 (0.588)</b> C:86% T:NA	pCi/L	11/07/19 07:22	13982-63-3	
Radium-228	EPA 9320	<b>1.30 ± 0.837 (1.62)</b> C:77% T:83%	pCi/L	11/08/19 20:30	15262-20-1	
Total Radium	Total Radium Calculation	<b>3.28 ± 1.45 (2.21)</b>	pCi/L	11/13/19 14:00	7440-14-4	

Sample: MCM-14		Lab ID: 2624542003	Collected: 10/15/19 16:21	Received: 10/22/19 09:30	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>3.50 ± 0.797 (0.324)</b> C:98% T:NA	pCi/L	11/07/19 09:09	13982-63-3	
Radium-228	EPA 9320	<b>5.20 ± 1.44 (1.80)</b> C:79% T:83%	pCi/L	11/08/19 20:30	15262-20-1	
Total Radium	Total Radium Calculation	<b>8.70 ± 2.24 (2.12)</b>	pCi/L	11/13/19 14:00	7440-14-4	

Sample: MCM-15		Lab ID: 2624542004	Collected: 10/15/19 16:31	Received: 10/22/19 09:30	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.638 ± 0.310 (0.385)</b> C:90% T:NA	pCi/L	11/07/19 09:09	13982-63-3	
Radium-228	EPA 9320	<b>0.341 ± 0.503 (1.08)</b> C:83% T:80%	pCi/L	11/08/19 19:29	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.979 ± 0.813 (1.47)</b>	pCi/L	11/13/19 14:00	7440-14-4	

Sample: FBL101519		Lab ID: 2624542005	Collected: 10/15/19 17:21	Received: 10/22/19 09:30	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.237 ± 0.210 (0.366)</b> C:93% T:NA	pCi/L	11/07/19 08:48	13982-63-3	
Radium-228	EPA 9320	<b>0.559 ± 0.576 (1.19)</b> C:75% T:83%	pCi/L	11/08/19 19:31	15262-20-1	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2624542PlantMcmanus App III&IV

Pace Project No.: 30331305

Sample: <b>FBL101519</b>		Lab ID: <b>2624542005</b>	Collected: 10/15/19 17:21	Received: 10/22/19 09:30	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	<b>0.796 ± 0.786 (1.56)</b>	pCi/L	11/13/19 14:00	7440-14-4	

Sample: <b>EQBL101519</b>		Lab ID: <b>2624542006</b>	Collected: 10/15/19 17:26	Received: 10/22/19 09:30	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.343 ± 0.321 (0.638)</b> C:90% T:NA	pCi/L	11/07/19 08:48	13982-63-3	
Radium-228	EPA 9320	<b>-0.229 ± 0.507 (1.23)</b> C:78% T:77%	pCi/L	11/08/19 19:33	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.343 ± 0.828 (1.87)</b>	pCi/L	11/13/19 14:00	7440-14-4	

Sample: <b>DUP-1</b>		Lab ID: <b>2624542007</b>	Collected: 10/15/19 00:01	Received: 10/22/19 09:30	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>2.91 ± 0.736 (0.430)</b> C:93% T:NA	pCi/L	11/07/19 08:48	13982-63-3	
Radium-228	EPA 9320	<b>2.95 ± 0.908 (1.14)</b> C:75% T:89%	pCi/L	11/08/19 19:41	15262-20-1	
Total Radium	Total Radium Calculation	<b>5.86 ± 1.64 (1.57)</b>	pCi/L	11/13/19 14:00	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: 2624542PlantMcmanus App III&IV

Pace Project No.: 30331305

QC Batch: 368370

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2624542001, 2624542002, 2624542003, 2624542004, 2624542005, 2624542006, 2624542007

METHOD BLANK: 1787257

Matrix: Water

Associated Lab Samples: 2624542001, 2624542002, 2624542003, 2624542004, 2624542005, 2624542006, 2624542007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.0477 ± 0.582 (1.37) C:76% T:75%	pCi/L	11/08/19 19:28	

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

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: 2624542PlantMcmanus App III&IV

Pace Project No.: 30331305

QC Batch: 368369

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Associated Lab Samples: 2624542001, 2624542002, 2624542003, 2624542004, 2624542005, 2624542006, 2624542007

METHOD BLANK: 1787256

Matrix: Water

Associated Lab Samples: 2624542001, 2624542002, 2624542003, 2624542004, 2624542005, 2624542006, 2624542007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.352 ± 0.285 (0.530) C:94% T:NA	pCi/L	11/07/19 07:21	

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

### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: 2624542PlantMcmanus App III&IV

Pace Project No.: 30331305

### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

### LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

## REPORT OF LABORATORY ANALYSIS

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# Chain of Custody

Samples were sent directly to the Subcontracting Laboratory.



State Of Origin: GA  
 Cert. Needed:  Yes  No

Workorder: 2624542      Workorder Name: Plant McManus App III & IV

Owner Received Date: 10/18/2019      Results Requested By: 11/15/2019

Report To: Betsy McDaniel  
 Pace Analytical Atlanta  
 110 Technology Parkway  
 Peachtree Corners, GA 30092  
 Phone (770)734-4200

Subcontract To: Pace Analytical Pittsburgh  
 1638 Roseytown Road  
 Suites 2, 3, & 4  
 Greensburg, PA 15601  
 Phone (724)850-5600

Requested Analysis

WO#: 30331305

Radium 226/228 (EPA 9815/9320)

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers							LAB USE ONLY	
						HNO3								
1	MCM-04	PS	10/15/2019 15:10	2624542001	Water	2								001
2	MCM-12	PS	10/15/2019 15:06	2624542002	Water	2								002
3	MCM-14	PS	10/15/2019 16:21	2624542003	Water	4								003
4	MCM-15	PS	10/15/2019 16:31	2624542004	Water	2								004
5	FBL101519	PS	10/15/2019 17:21	2624542005	Water	2								005
6	EQBL101519	PS	10/15/2019 17:26	2624542006	Water	2								006
7	DUP-1	PS	10/15/2019 00:00	2624542007	Water	2								007

Comments

Transfers	Released By	Date/Time	Received By	Date/Time
1			<i>BECK THOMPSON</i>	10-22-19 09:30
2				
3				

Cooler Temperature on Receipt *N/A* °C      Custody Seal  Y or  N      Received on Ice  Y or  N      Samples Intact  Y or  N

\*\*\*In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.  
 This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pittsburgh Lab Sample Condition Upon Receipt



Client Name: Pace GA

Project # 30331305

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Other \_\_\_\_\_

Tracking #: 1069 9308 4495

Label	<u>BLM</u>
LIMS Login	<u>BLM</u>

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

Thermometer Used N/A      Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp N/A °C      Correction Factor: \_\_\_\_\_ °C      Final Temp: ✓ °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot#	Date and Initials of person examining contents:
				<u>10D4281</u>	<u>BLM 10-22-19</u>
Chain of Custody Present:	/				
Chain of Custody Filled Out:	/				
Chain of Custody Relinquished:		/			
Sampler Name & Signature on COC:		/			
Sample Labels match COC:	/				
-Includes date/time/ID      Matrix: <u>WT</u>					
Samples Arrived within Hold Time:	/				
Short Hold Time Analysis (<72hr remaining):		/			
Rush Turn Around Time Requested:		/			
Sufficient Volume:	/				
Correct Containers Used:	/				
-Pace Containers Used:	/				
Containers Intact:	/				
Orthophosphate field filtered			/		
Hex Cr Aqueous sample field filtered			/		
Organic Samples checked for dechlorination:			/		
Filtered volume received for Dissolved tests			/		
All containers have been checked for preservation.	/				
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix					
All containers meet method preservation requirements.	/			Initial when completed <u>BLM</u>	Date/time of preservation
				Lot # of added preservative	
Headspace in VOA Vials (>6mm):			/		
Trip Blank Present:			/		
Trip Blank Custody Seals Present			/		
Rad Samples Screened < 0.5 mrem/hr	/			Initial when completed: <u>BLM</u>	Date: <u>10-22-19</u>

Client Notification/ Resolution:

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Contacted By: \_\_\_\_\_

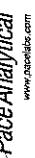
Comments/ Resolution: \_\_\_\_\_

A check in this box indicates that additional information has been stored in ereports.

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

\*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

# Quality Control Sample Performance Assessment



**Analyst Must Manually Enter All Fields Highlighted in Yellow.**

Test: Ra-226  
Analyst: LAL  
Date: 11/6/2019  
Worklist: 50622  
Matrix: DW

Method Blank Assessment	
MB Sample ID	1787256
MB concentration:	0.352
M/B Counting Uncertainty:	0.281
MB MDC:	0.530
MB Numerical Performance Indicator:	2.45
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	
LCSID (Y or N)?	N
LCS50622	LCS50622
Count Date:	11/7/2019
Spike I.D.:	19-033
Decay Corrected Spike Concentration (pCi/mL):	24.053
Volume Used (mL):	0.10
Aliquot Volume (L, g, F):	0.519
Target Conc. (pCi/L, g, F):	4.632
Uncertainty (Calculated):	0.056
Result (pCi/L, g, F):	4.973
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.765
Numerical Performance Indicator:	0.87
Percent Recovery:	107.36%
Status vs Numerical Indicator:	N/A
Status vs Recovery:	Pass
Upper % Recovery Limits:	125%
Lower % Recovery Limits:	75%

Duplicate Sample Assessment	
Sample I.D.:	2624542003
Duplicate Sample I.D.:	2624542003DUP
Sample Result (pCi/L, g, F):	3.496
Sample Result Counting Uncertainty (pCi/L, g, F):	0.615
Sample Duplicate Result (pCi/L, g, F):	3.553
Sample Duplicate Counting Uncertainty (pCi/L, g, F):	0.626
Are sample and/or duplicate results below RL?	See Below #
Duplicate Numerical Performance Indicator:	-0.128
Duplicate RPD:	1.63%
Duplicate Status vs Numerical Indicator:	N/A
Duplicate Status vs RPD:	Pass
% RPD Limit:	25%

Sample Matrix Spike Control Assessment		MS/MSD 1	MS/MSD 2
Sample Collection Date:			
Sample I.D.:			
Sample MS I.D.:			
Sample MSD I.D.:			
Spike I.D.:			
MS/MSD Decay Corrected Spike Concentration (pCi/mL):			
Spike Volume Used in MS (mL):			
Spike Volume Used in MSD (mL):			
MS Aliquot (L, g, F):			
MSD Aliquot (L, g, F):			
MS Target Conc. (pCi/L, g, F):			
MSD Target Conc. (pCi/L, g, F):			
MS Spike Uncertainty (calculated):			
MSD Spike Uncertainty (calculated):			
Sample Result Counting Uncertainty (pCi/L, g, F):			
Sample Matrix Spike Result:			
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):			
Sample Matrix Spike Duplicate Result:			
Sample Matrix Spike Duplicate Counting Uncertainty (pCi/L, g, F):			
MS Numerical Performance Indicator:			
MSD Numerical Performance Indicator:			
MS Percent Recovery:			
MSD Percent Recovery:			
MS Status vs Numerical Indicator:			
MSD Status vs Numerical Indicator:			
MS Status vs Recovery:			
MSD Status vs Recovery:			
MS/MSD Upper % Recovery Limits:			
MS/MSD Lower % Recovery Limits:			

Matrix Spike/Matrix Spike Duplicate Sample Assessment	
Sample I.D.:	
Sample MS I.D.:	
Sample MSD I.D.:	
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	
Sample Matrix Spike Duplicate Result:	
Sample Matrix Spike Duplicate Counting Uncertainty (pCi/L, g, F):	
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):	
Duplicate Numerical Performance Indicator:	
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:	
MS/ MSD Duplicate Status vs Numerical Indicator:	
MS/ MSD Duplicate Status vs RPD:	
% RPD Limit:	

# Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

LAM 11/13/19

# Quality Control Sample Performance Assessment



Analyst Must Manually Enter All Fields Highlighted in Yellow.

Test: Re-226  
Analyst: LAL  
Date: 11/6/2019  
Worklist: 50622  
Matrix: DW

Method Blank Assessment	
MB Sample ID	1787256
MB Concentration:	0.352
M/B Counting Uncertainty:	0.281
MB MDC:	0.530
MB Numerical Performance Indicator:	2.45
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCS/D (Y or N)?	
	LCS50622	Y
Count Date:	11/7/2019	LCS50622
Spike I.D.:	19-033	11/7/2019
Decay Corrected Spike Concentration (pCi/mL):	24.053	19-033
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.519	0.512
Target Conc. (pCi/L, g, F):	4.632	4.700
Uncertainty (Calculated):	0.056	0.056
Result (pCi/L, g, F):	4.973	4.328
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.765	0.705
Numerical Performance Indicator:	0.87	-1.03
Percent Recovery:	107.36%	92.09%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	125%	125%
Lower % Recovery Limits:	75%	75%

Duplicate Sample Assessment	
Sample I.D.:	LCS50622
Duplicate Sample I.D.:	LCS50622
Sample Result (pCi/L, g, F):	4.973
Sample Result Counting Uncertainty (pCi/L, g, F):	0.765
Sample Duplicate Result (pCi/L, g, F):	4.328
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.705
Are sample and/or duplicate results below RL?	NO
Duplicate Numerical Performance Indicator:	1.215
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	15.31%
Duplicate Status vs Numerical Indicator:	N/A
Duplicate Status vs RPD:	Pass
% RPD Limit:	25%

# Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date: Sample I.D. Sample MS I.D. Sample MSD I.D. Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL): Spike Volume Used in MS (mL): Spike Volume Used in MSD (mL): MS Aliquot (L, g, F): MS Target Conc. (pCi/L, g, F): MSD Aliquot (L, g, F): MSD Target Conc. (pCi/L, g, F): MS Spike Uncertainty (calculated): MSD Spike Uncertainty (calculated):		
Sample Result: Sample Result Counting Uncertainty (pCi/L, g, F): Sample Matrix Spike Result: Matrix Spike Result Counting Uncertainty (pCi/L, g, F): Sample Matrix Spike Duplicate Result: Sample Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F): MS Numerical Performance Indicator: MSD Numerical Performance Indicator:		
MS Percent Recovery: MSD Percent Recovery: MS Status vs Numerical Indicator: MSD Status vs Numerical Indicator: MS Status vs Recovery: MSD Status vs Recovery: MS/MSD Upper % Recovery Limits: MS/MSD Lower % Recovery Limits:		

Matrix Spike/Matrix Spike Duplicate Sample Assessment
Sample I.D. Sample MS I.D. Sample MSD I.D. Sample Matrix Spike Result: Sample Matrix Spike Duplicate Result: Sample Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F): Duplicate Numerical Performance Indicator: (Based on the Percent Recoveries) MS/ MSD Duplicate RPD: MS/ MSD Duplicate Status vs Numerical Indicator: MS/ MSD Duplicate Status vs RPD: % RPD Limit:

UAM 11/13/19

TAR DW QC  
Printed: 11/13/2019 8:38 AM  
11/13/19

# Quality Control Sample Performance Assessment



**Analyst Must Manually Enter All Fields Highlighted in Yellow.**

Test: Ra-228  
Analyst: VAL  
Date: 11/14/2019  
Worklist: 50623  
Matrix: WT

Method Blank Assessment	
MB Sample ID	1787257
MB concentration:	-0.048
M/B 2 Sigma CSU:	0.582
MB MDC:	1.371
MB Numerical Performance Indicator:	-0.16
MB Status vs Numerical Indicator:	Pass
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCS (Y or N)?	
	LCS50623	LCS50623
Count Date:	11/8/2019	11/8/2019
Spike I.D.:	19-026	19-026
Decay Corrected Spike Concentration (pCi/mL):	34.783	34.783
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.808	0.810
Target Conc. (pCi/L, g, F):	4.302	4.296
Uncertainty (Calculated):	0.211	0.210
Result (pCi/L, g, F):	3.306	4.684
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	0.853	1.079
Numerical Performance Indicator:	-2.22	0.69
Percent Recovery:	76.85%	109.04%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Duplicate Sample Assessment	
Sample I.D.:	LCS50623
Duplicate Sample I.D.:	LCS50623
Sample Result (pCi/L, g, F):	3.306
Sample Duplicate Result (pCi/L, g, F):	0.853
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	4.684
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.079
Are sample and/or duplicate results below RL?	NO
Duplicate Numerical Performance Indicator:	-1.963
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	34.64%
Duplicate Status vs Numerical Indicator:	Pass
Duplicate Status vs RPD:	Pass
% RPD Limit:	36%

# Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date: Sample I.D. Sample MS I.D. Sample MSD I.D. Spike I.D.: MS/MSD Decay Corrected Spike Concentration (pCi/mL): Spike Volume Used in MS (mL): Spike Volume Used in MSD (mL): MS Aliquot (L, g, F): MS Target Conc. (pCi/L, g, F): MSD Aliquot (L, g, F): MSD Target Conc. (pCi/L, g, F): MS Spike Uncertainty (calculated): MSD Spike Uncertainty (calculated):		
Sample Result: Sample Result 2 Sigma CSU (pCi/L, g, F): Sample Matrix Spike Result: Matrix Spike Result 2 Sigma CSU (pCi/L, g, F): Sample Matrix Spike Duplicate Result: Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F): MS Numerical Performance Indicator: MSD Numerical Performance Indicator: MS Percent Recovery: MSD Percent Recovery: MS Status vs Numerical Indicator: MSD Status vs Numerical Indicator: MS Status vs Recovery: MSD Status vs Recovery: MS/MSD Upper % Recovery Limits: MS/MSD Lower % Recovery Limits:		

Matrix Spike/Matrix Spike Duplicate Sample Assessment
Sample I.D. Sample MS I.D. Sample MSD I.D. Sample Matrix Spike Result: Matrix Spike Result 2 Sigma CSU (pCi/L, g, F): Sample Matrix Spike Duplicate Result: Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F): Duplicate Numerical Performance Indicator: (Based on the Percent Recoveries) MS/MSD Duplicate RPD: MS/MSD Duplicate Status vs Numerical Indicator: MS/MSD Duplicate Status vs RPD: % RPD Limit:

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January 16, 2020

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

RE: Project: Plant McManus App III & IV  
Pace Project No.: 2624543

Dear Joju Abraham:

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

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

Sincerely,



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

Enclosures

cc: Lea Millet, Resolute Environmental & Water Resources  
Lauren Petty, Southern Company Services, Inc.  
Kevin Stephenson, Resolute Environmental & Water  
Resources Consulting, LLC  
Rebecca Thornton, Pace Analytical Atlanta  
Stephen Wilson, Resolute Environmental & Water  
Resources Consulting, LLC



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: Plant McManus App III & IV  
Pace Project No.: 2624543

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### **Pace Analytical Services Atlanta**

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

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

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## SAMPLE SUMMARY

Project: Plant McManus App III & IV

Pace Project No.: 2624543

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624543001	MCM-01	Water	10/16/19 13:32	10/18/19 09:50
2624543002	MCM-02	Water	10/16/19 11:15	10/18/19 09:50
2624543003	MCM-05	Water	10/16/19 15:26	10/18/19 09:50
2624543004	MCM-08	Water	10/16/19 15:22	10/18/19 09:50
2624543005	MCM-11	Water	10/16/19 13:47	10/18/19 09:50
2624543006	MCM-16	Water	10/16/19 09:59	10/18/19 09:50
2624543007	MCM-17	Water	10/16/19 10:37	10/18/19 09:50
2624543008	FBL101619	Water	10/16/19 16:35	10/18/19 09:50
2624543009	EQBL101619	Water	10/16/19 16:40	10/18/19 09:50
2624543010	DUP-2	Water	10/16/19 00:00	10/18/19 09:50

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### SAMPLE ANALYTE COUNT

Project: Plant McManus App III & IV  
Pace Project No.: 2624543

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2624543001	MCM-01	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624543002	MCM-02	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624543003	MCM-05	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624543004	MCM-08	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624543005	MCM-11	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624543006	MCM-16	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624543007	MCM-17	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624543008	FBL101619	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624543009	EQBL101619	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624543010	DUP-2	EPA 6020B	CSW	14

### REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Plant McManus App III & IV  
Pace Project No.: 2624543

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<b>Lab ID</b>	<b>Sample ID</b>	<b>Method</b>	<b>Analysts</b>	<b>Analytes Reported</b>
		EPA 7470A	DRB	1
		SM 2540C	MZP	1
		EPA 300.0	MWB	3

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Plant McManus App III & IV  
Pace Project No.: 2624543

Sample: MCM-01		Lab ID: 2624543001		Collected: 10/16/19 13:32		Received: 10/18/19 09:50		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	10/22/19 14:30	10/24/19 19:25	7440-36-0		
Arsenic	<b>0.010</b>	mg/L	0.0050	0.00035	1	10/22/19 14:30	10/24/19 19:25	7440-38-2	B	
Barium	<b>0.074</b>	mg/L	0.010	0.00049	1	10/22/19 14:30	10/24/19 19:25	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	10/22/19 14:30	10/24/19 19:25	7440-41-7		
Boron	<b>0.036J</b>	mg/L	0.040	0.0049	1	10/22/19 14:30	10/24/19 19:25	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	10/22/19 14:30	10/24/19 19:25	7440-43-9		
Calcium	<b>13.6</b>	mg/L	5.0	0.55	50	10/22/19 14:30	10/24/19 19:30	7440-70-2		
Chromium	ND	mg/L	0.010	0.00039	1	10/22/19 14:30	10/24/19 19:25	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	10/22/19 14:30	10/24/19 19:25	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	10/22/19 14:30	10/24/19 19:25	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	10/22/19 14:30	10/24/19 19:25	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	10/22/19 14:30	10/24/19 19:25	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	10/22/19 14:30	10/24/19 19:25	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	10/22/19 14:30	10/24/19 19:25	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	10/23/19 11:09	10/24/19 12:50	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>104</b>	mg/L	10.0	10.0	1		10/23/19 15:50			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>21.4</b>	mg/L	1.0	0.024	1		10/25/19 17:21	16887-00-6	M1	
Fluoride	<b>0.046J</b>	mg/L	0.30	0.029	1		10/25/19 17:21	16984-48-8		
Sulfate	<b>31.9</b>	mg/L	1.0	0.017	1		10/25/19 17:21	14808-79-8	M1	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Plant McManus App III & IV  
Pace Project No.: 2624543

Sample: MCM-02		Lab ID: 2624543002		Collected: 10/16/19 11:15		Received: 10/18/19 09:50		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	10/22/19 14:30	10/24/19 19:36	7440-36-0		
Arsenic	<b>0.0030J</b>	mg/L	0.0050	0.00035	1	10/22/19 14:30	10/24/19 19:36	7440-38-2	B	
Barium	<b>0.10</b>	mg/L	0.010	0.00049	1	10/22/19 14:30	10/24/19 19:36	7440-39-3		
Beryllium	<b>0.00013J</b>	mg/L	0.0030	0.000074	1	10/22/19 14:30	10/24/19 19:36	7440-41-7		
Boron	<b>0.085</b>	mg/L	0.040	0.0049	1	10/22/19 14:30	10/24/19 19:36	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	10/22/19 14:30	10/24/19 19:36	7440-43-9		
Calcium	<b>4.9</b>	mg/L	0.10	0.011	1	10/22/19 14:30	10/24/19 19:36	7440-70-2		
Chromium	ND	mg/L	0.010	0.00039	1	10/22/19 14:30	10/24/19 19:36	7440-47-3		
Cobalt	<b>0.00037J</b>	mg/L	0.0050	0.00030	1	10/22/19 14:30	10/24/19 19:36	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	10/22/19 14:30	10/24/19 19:36	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	10/22/19 14:30	10/24/19 19:36	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	10/22/19 14:30	10/24/19 19:36	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	10/22/19 14:30	10/24/19 19:36	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	10/22/19 14:30	10/24/19 19:36	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	10/23/19 11:09	10/24/19 12:53	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>96.0</b>	mg/L	10.0	10.0	1		10/23/19 15:51			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>33.1</b>	mg/L	1.0	0.024	1		10/25/19 18:28	16887-00-6	M1	
Fluoride	<b>0.044J</b>	mg/L	0.30	0.029	1		10/25/19 18:28	16984-48-8		
Sulfate	<b>24.4</b>	mg/L	1.0	0.017	1		10/25/19 18:28	14808-79-8	M1	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Plant McManus App III & IV  
Pace Project No.: 2624543

Sample: MCM-05		Lab ID: 2624543003		Collected: 10/16/19 15:26		Received: 10/18/19 09:50		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	10/22/19 14:30	10/24/19 19:48	7440-36-0		
Arsenic	<b>0.0047J</b>	mg/L	0.0050	0.00035	1	10/22/19 14:30	10/24/19 19:48	7440-38-2	B	
Barium	<b>0.012</b>	mg/L	0.010	0.00049	1	10/22/19 14:30	10/24/19 19:48	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	10/22/19 14:30	10/24/19 19:48	7440-41-7		
Boron	<b>0.49</b>	mg/L	0.040	0.0049	1	10/22/19 14:30	10/24/19 19:48	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	10/22/19 14:30	10/24/19 19:48	7440-43-9		
Calcium	<b>55.2</b>	mg/L	5.0	0.55	50	10/22/19 14:30	10/24/19 19:53	7440-70-2		
Chromium	<b>0.00057J</b>	mg/L	0.010	0.00039	1	10/22/19 14:30	10/24/19 19:48	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	10/22/19 14:30	10/24/19 19:48	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	10/22/19 14:30	10/24/19 19:48	7439-92-1		
Lithium	<b>0.021J</b>	mg/L	0.030	0.00078	1	10/22/19 14:30	10/24/19 19:48	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	10/22/19 14:30	10/24/19 19:48	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	10/22/19 14:30	10/24/19 19:48	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	10/22/19 14:30	10/24/19 19:48	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	10/23/19 11:09	10/24/19 12:55	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>2860</b>	mg/L	10.0	10.0	1		10/23/19 16:03			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>1390</b>	mg/L	200	4.8	200		10/28/19 15:17	16887-00-6		
Fluoride	<b>0.41</b>	mg/L	0.30	0.029	1		10/25/19 18:50	16984-48-8		
Sulfate	<b>252</b>	mg/L	200	3.4	200		10/28/19 15:17	14808-79-8		

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## ANALYTICAL RESULTS

Project: Plant McManus App III & IV

Pace Project No.: 2624543

Sample: <b>MCM-08</b>		Lab ID: <b>2624543004</b>		Collected: 10/16/19 15:22		Received: 10/18/19 09:50		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	10/22/19 14:30	10/24/19 20:11	7440-36-0		
Arsenic	<b>0.024</b>	mg/L	0.0050	0.00035	1	10/22/19 14:30	10/24/19 20:11	7440-38-2		
Barium	<b>0.54</b>	mg/L	0.010	0.00049	1	10/22/19 14:30	10/24/19 20:11	7440-39-3		
Beryllium	<b>0.00059J</b>	mg/L	0.0030	0.000074	1	10/22/19 14:30	10/24/19 20:11	7440-41-7		
Boron	<b>0.39</b>	mg/L	0.040	0.0049	1	10/22/19 14:30	10/24/19 20:11	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	10/22/19 14:30	10/24/19 20:11	7440-43-9		
Calcium	<b>53.0</b>	mg/L	5.0	0.55	50	10/22/19 14:30	10/24/19 20:16	7440-70-2		
Chromium	<b>0.010</b>	mg/L	0.010	0.00039	1	10/22/19 14:30	10/24/19 20:11	7440-47-3		
Cobalt	<b>0.0063</b>	mg/L	0.0050	0.00030	1	10/22/19 14:30	10/24/19 20:11	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	10/22/19 14:30	10/24/19 20:11	7439-92-1		
Lithium	<b>0.0027J</b>	mg/L	0.030	0.00078	1	10/22/19 14:30	10/24/19 20:11	7439-93-2		
Molybdenum	<b>0.0026J</b>	mg/L	0.010	0.00095	1	10/22/19 14:30	10/24/19 20:11	7439-98-7		
Selenium	<b>0.0043J</b>	mg/L	0.010	0.0013	1	10/22/19 14:30	10/24/19 20:11	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	10/22/19 14:30	10/24/19 20:11	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	10/23/19 11:09	10/24/19 12:57	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>4070</b>	mg/L	10.0	10.0	1		10/23/19 16:04			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>2150</b>	mg/L	200	4.8	200		10/28/19 16:24	16887-00-6		
Fluoride	<b>0.10J</b>	mg/L	0.30	0.029	1		10/25/19 19:12	16984-48-8		
Sulfate	<b>476</b>	mg/L	200	3.4	200		10/28/19 16:24	14808-79-8		

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### ANALYTICAL RESULTS

Project: Plant McManus App III & IV  
Pace Project No.: 2624543

Sample: MCM-11		Lab ID: 2624543005		Collected: 10/16/19 13:47		Received: 10/18/19 09:50		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	10/22/19 14:30	10/24/19 20:22	7440-36-0		
Arsenic	<b>0.0054</b>	mg/L	0.0050	0.00035	1	10/22/19 14:30	10/24/19 20:22	7440-38-2	B	
Barium	<b>0.036</b>	mg/L	0.010	0.00049	1	10/22/19 14:30	10/24/19 20:22	7440-39-3		
Beryllium	<b>0.000090J</b>	mg/L	0.0030	0.000074	1	10/22/19 14:30	10/24/19 20:22	7440-41-7		
Boron	<b>0.032J</b>	mg/L	0.040	0.0049	1	10/22/19 14:30	10/24/19 20:22	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	10/22/19 14:30	10/24/19 20:22	7440-43-9		
Calcium	<b>2.2</b>	mg/L	0.10	0.011	1	10/22/19 14:30	10/24/19 20:22	7440-70-2		
Chromium	<b>0.00072J</b>	mg/L	0.010	0.00039	1	10/22/19 14:30	10/24/19 20:22	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	10/22/19 14:30	10/24/19 20:22	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	10/22/19 14:30	10/24/19 20:22	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	10/22/19 14:30	10/24/19 20:22	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	10/22/19 14:30	10/24/19 20:22	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	10/22/19 14:30	10/24/19 20:22	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	10/22/19 14:30	10/24/19 20:22	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	10/23/19 11:09	10/24/19 13:00	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>82.0</b>	mg/L	10.0	10.0	1		10/23/19 16:04			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>12.2</b>	mg/L	1.0	0.024	1		10/25/19 19:34	16887-00-6		
Fluoride	<b>0.10J</b>	mg/L	0.30	0.029	1		10/25/19 19:34	16984-48-8		
Sulfate	<b>17.4</b>	mg/L	1.0	0.017	1		10/25/19 19:34	14808-79-8		

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## ANALYTICAL RESULTS

Project: Plant McManus App III & IV  
Pace Project No.: 2624543

Sample: MCM-16		Lab ID: 2624543006		Collected: 10/16/19 09:59		Received: 10/18/19 09:50		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	10/22/19 14:30	10/24/19 20:33	7440-36-0		
Arsenic	<b>0.0010J</b>	mg/L	0.0050	0.00035	1	10/22/19 14:30	10/24/19 20:33	7440-38-2	B	
Barium	<b>0.13</b>	mg/L	0.010	0.00049	1	10/22/19 14:30	10/24/19 20:33	7440-39-3		
Beryllium	<b>0.00014J</b>	mg/L	0.0030	0.000074	1	10/22/19 14:30	10/24/19 20:33	7440-41-7		
Boron	<b>0.051</b>	mg/L	0.040	0.0049	1	10/22/19 14:30	10/24/19 20:33	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	10/22/19 14:30	10/24/19 20:33	7440-43-9		
Calcium	<b>4.8</b>	mg/L	0.10	0.011	1	10/22/19 14:30	10/24/19 20:33	7440-70-2		
Chromium	ND	mg/L	0.010	0.00039	1	10/22/19 14:30	10/24/19 20:33	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	10/22/19 14:30	10/24/19 20:33	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	10/22/19 14:30	10/24/19 20:33	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	10/22/19 14:30	10/24/19 20:33	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	10/22/19 14:30	10/24/19 20:33	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	10/22/19 14:30	10/24/19 20:33	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	10/22/19 14:30	10/24/19 20:33	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	10/23/19 11:09	10/24/19 13:02	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>95.0</b>	mg/L	10.0	10.0	1		10/23/19 16:04			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>20.0</b>	mg/L	1.0	0.024	1		10/25/19 19:56	16887-00-6		
Fluoride	<b>0.044J</b>	mg/L	0.30	0.029	1		10/25/19 19:56	16984-48-8		
Sulfate	<b>28.5</b>	mg/L	1.0	0.017	1		10/25/19 19:56	14808-79-8		

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## ANALYTICAL RESULTS

Project: Plant McManus App III & IV

Pace Project No.: 2624543

Sample: <b>MCM-17</b>		Lab ID: <b>2624543007</b>		Collected: 10/16/19 10:37		Received: 10/18/19 09:50		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	10/22/19 14:30	10/24/19 20:45	7440-36-0		
Arsenic	<b>0.0043J</b>	mg/L	0.0050	0.00035	1	10/22/19 14:30	10/24/19 20:45	7440-38-2	B	
Barium	<b>0.14</b>	mg/L	0.010	0.00049	1	10/22/19 14:30	10/24/19 20:45	7440-39-3		
Beryllium	<b>0.00014J</b>	mg/L	0.0030	0.000074	1	10/22/19 14:30	10/24/19 20:45	7440-41-7		
Boron	<b>1.6</b>	mg/L	0.040	0.0049	1	10/22/19 14:30	10/24/19 20:45	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	10/22/19 14:30	10/24/19 20:45	7440-43-9		
Calcium	<b>118</b>	mg/L	5.0	0.55	50	10/22/19 14:30	10/24/19 20:51	7440-70-2		
Chromium	<b>0.0063J</b>	mg/L	0.010	0.00039	1	10/22/19 14:30	10/24/19 20:45	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	10/22/19 14:30	10/24/19 20:45	7440-48-4		
Lead	<b>0.00034J</b>	mg/L	0.0050	0.000046	1	10/22/19 14:30	10/24/19 20:45	7439-92-1		
Lithium	<b>0.024J</b>	mg/L	0.030	0.00078	1	10/22/19 14:30	10/24/19 20:45	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	10/22/19 14:30	10/24/19 20:45	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	10/22/19 14:30	10/24/19 20:45	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	10/22/19 14:30	10/24/19 20:45	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	10/23/19 11:09	10/24/19 13:04	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>7740</b>	mg/L	10.0	10.0	1		10/23/19 16:04			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>4260</b>	mg/L	250	6.0	250		10/28/19 20:04	16887-00-6		
Fluoride	<b>0.083J</b>	mg/L	0.30	0.029	1		10/25/19 20:18	16984-48-8		
Sulfate	<b>453</b>	mg/L	250	4.2	250		10/28/19 20:04	14808-79-8		

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## ANALYTICAL RESULTS

Project: Plant McManus App III & IV  
Pace Project No.: 2624543

Sample: <b>FBL101619</b>		Lab ID: <b>2624543008</b>		Collected: 10/16/19 16:35	Received: 10/18/19 09:50	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual	
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	10/22/19 14:30	10/24/19 20:56	7440-36-0		
Arsenic	<b>0.0017J</b>	mg/L	0.0050	0.00035	1	10/22/19 14:30	10/24/19 20:56	7440-38-2	B	
Barium	ND	mg/L	0.010	0.00049	1	10/22/19 14:30	10/24/19 20:56	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	10/22/19 14:30	10/24/19 20:56	7440-41-7		
Boron	ND	mg/L	0.040	0.0049	1	10/22/19 14:30	10/24/19 20:56	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	10/22/19 14:30	10/24/19 20:56	7440-43-9		
Calcium	<b>0.030J</b>	mg/L	0.10	0.011	1	10/22/19 14:30	10/24/19 20:56	7440-70-2		
Chromium	ND	mg/L	0.010	0.00039	1	10/22/19 14:30	10/24/19 20:56	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	10/22/19 14:30	10/24/19 20:56	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	10/22/19 14:30	10/24/19 20:56	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	10/22/19 14:30	10/24/19 20:56	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	10/22/19 14:30	10/24/19 20:56	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	10/22/19 14:30	10/24/19 20:56	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	10/22/19 14:30	10/24/19 20:56	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	10/23/19 11:09	10/24/19 13:11	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>11.0</b>	mg/L	10.0	10.0	1		10/23/19 16:04			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>1.3</b>	mg/L	1.0	0.024	1		10/25/19 20:40	16887-00-6		
Fluoride	ND	mg/L	0.30	0.029	1		10/25/19 20:40	16984-48-8		
Sulfate	<b>0.067J</b>	mg/L	1.0	0.017	1		10/25/19 20:40	14808-79-8		

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## ANALYTICAL RESULTS

Project: Plant McManus App III & IV  
Pace Project No.: 2624543

Sample: EQBL101619		Lab ID: 2624543009		Collected: 10/16/19 16:40		Received: 10/18/19 09:50		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	10/22/19 14:30	10/24/19 21:02	7440-36-0		
Arsenic	<b>0.0012J</b>	mg/L	0.0050	0.00035	1	10/22/19 14:30	10/24/19 21:02	7440-38-2	B	
Barium	ND	mg/L	0.010	0.00049	1	10/22/19 14:30	10/24/19 21:02	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	10/22/19 14:30	10/24/19 21:02	7440-41-7		
Boron	ND	mg/L	0.040	0.0049	1	10/22/19 14:30	10/24/19 21:02	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	10/22/19 14:30	10/24/19 21:02	7440-43-9		
Calcium	ND	mg/L	0.10	0.011	1	10/22/19 14:30	10/24/19 21:02	7440-70-2		
Chromium	ND	mg/L	0.010	0.00039	1	10/22/19 14:30	10/24/19 21:02	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	10/22/19 14:30	10/24/19 21:02	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	10/22/19 14:30	10/24/19 21:02	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	10/22/19 14:30	10/24/19 21:02	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	10/22/19 14:30	10/24/19 21:02	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	10/22/19 14:30	10/24/19 21:02	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	10/22/19 14:30	10/24/19 21:02	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	10/23/19 11:09	10/24/19 13:14	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	ND	mg/L	10.0	10.0	1		10/23/19 16:05			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	ND	mg/L	1.0	0.024	1		10/25/19 22:30	16887-00-6		
Fluoride	ND	mg/L	0.30	0.029	1		10/25/19 22:30	16984-48-8		
Sulfate	ND	mg/L	1.0	0.017	1		10/25/19 22:30	14808-79-8		

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## ANALYTICAL RESULTS

Project: Plant McManus App III & IV  
Pace Project No.: 2624543

Sample: DUP-2		Lab ID: 2624543010		Collected: 10/16/19 00:00		Received: 10/18/19 09:50		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	10/22/19 14:30	10/24/19 21:19	7440-36-0	
Arsenic	<b>0.0042J</b>	mg/L	0.0050	0.00035	1	10/22/19 14:30	10/24/19 21:19	7440-38-2	B
Barium	<b>0.013</b>	mg/L	0.010	0.00049	1	10/22/19 14:30	10/24/19 21:19	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	10/22/19 14:30	10/24/19 21:19	7440-41-7	
Boron	<b>0.53</b>	mg/L	0.040	0.0049	1	10/22/19 14:30	10/24/19 21:19	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	10/22/19 14:30	10/24/19 21:19	7440-43-9	
Calcium	<b>55.6</b>	mg/L	5.0	0.55	50	10/22/19 14:30	10/24/19 21:25	7440-70-2	
Chromium	<b>0.00064J</b>	mg/L	0.010	0.00039	1	10/22/19 14:30	10/24/19 21:19	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	10/22/19 14:30	10/24/19 21:19	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	10/22/19 14:30	10/24/19 21:19	7439-92-1	
Lithium	<b>0.023J</b>	mg/L	0.030	0.00078	1	10/22/19 14:30	10/24/19 21:19	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	10/22/19 14:30	10/24/19 21:19	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	10/22/19 14:30	10/24/19 21:19	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	10/22/19 14:30	10/24/19 21:19	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	10/23/19 11:09	10/24/19 13:16	7439-97-6	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>2790</b>	mg/L	10.0	10.0	1		10/23/19 16:05		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>1380</b>	mg/L	100	2.4	100		10/28/19 17:30	16887-00-6	
Fluoride	<b>0.40</b>	mg/L	0.30	0.029	1		10/25/19 22:53	16984-48-8	
Sulfate	<b>184</b>	mg/L	100	1.7	100		10/28/19 17:30	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant McManus App III & IV

Pace Project No.: 2624543

QC Batch: 37395

Analysis Method: EPA 7470A

QC Batch Method: EPA 7470A

Analysis Description: 7470 Mercury

Associated Lab Samples: 2624543001, 2624543002, 2624543003, 2624543004, 2624543005, 2624543006, 2624543007, 2624543008, 2624543009, 2624543010

METHOD BLANK: 169178

Matrix: Water

Associated Lab Samples: 2624543001, 2624543002, 2624543003, 2624543004, 2624543005, 2624543006, 2624543007, 2624543008, 2624543009, 2624543010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	10/24/19 12:17	

LABORATORY CONTROL SAMPLE: 169179

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0025	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 169180 169181

Parameter	Units	2624541001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L		0.0025	0.0025	0.0025	0.0026	101	103	75-125	2	20	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant McManus App III & IV  
Pace Project No.: 2624543

QC Batch: 37347 Analysis Method: EPA 6020B  
QC Batch Method: EPA 3005A Analysis Description: 6020B MET  
Associated Lab Samples: 2624543001, 2624543002, 2624543003, 2624543004, 2624543005, 2624543006, 2624543007, 2624543008, 2624543009, 2624543010

METHOD BLANK: 168971 Matrix: Water  
Associated Lab Samples: 2624543001, 2624543002, 2624543003, 2624543004, 2624543005, 2624543006, 2624543007, 2624543008, 2624543009, 2624543010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	10/24/19 16:36	
Arsenic	mg/L	0.0010J	0.0050	0.00035	10/24/19 16:36	
Barium	mg/L	ND	0.010	0.00049	10/24/19 16:36	
Beryllium	mg/L	ND	0.0030	0.000074	10/24/19 16:36	
Boron	mg/L	ND	0.040	0.0049	10/24/19 16:36	
Cadmium	mg/L	ND	0.0025	0.00011	10/24/19 16:36	
Calcium	mg/L	ND	0.10	0.011	10/24/19 16:36	
Chromium	mg/L	ND	0.010	0.00039	10/24/19 16:36	
Cobalt	mg/L	ND	0.0050	0.00030	10/24/19 16:36	
Lead	mg/L	ND	0.0050	0.000046	10/24/19 16:36	
Lithium	mg/L	ND	0.030	0.00078	10/24/19 16:36	
Molybdenum	mg/L	ND	0.010	0.00095	10/24/19 16:36	
Selenium	mg/L	ND	0.010	0.0013	10/24/19 16:36	
Thallium	mg/L	ND	0.0010	0.000052	10/24/19 16:36	

LABORATORY CONTROL SAMPLE: 168972

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.10	100	80-120	
Arsenic	mg/L	0.1	0.098	98	80-120	
Barium	mg/L	0.1	0.10	101	80-120	
Beryllium	mg/L	0.1	0.11	108	80-120	
Boron	mg/L	1	1.1	107	80-120	
Cadmium	mg/L	0.1	0.097	97	80-120	
Calcium	mg/L	1	1.0	101	80-120	
Chromium	mg/L	0.1	0.10	102	80-120	
Cobalt	mg/L	0.1	0.098	98	80-120	
Lead	mg/L	0.1	0.098	98	80-120	
Lithium	mg/L	0.1	0.11	108	80-120	
Molybdenum	mg/L	0.1	0.10	102	80-120	
Selenium	mg/L	0.1	0.097	97	80-120	
Thallium	mg/L	0.1	0.10	102	80-120	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant McManus App III & IV  
Pace Project No.: 2624543

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 168973		168974		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		2624496002 Result	MS Spike Conc.	MSD Spike Conc.									
Antimony	mg/L	ND	0.1	0.1	0.10	0.098	100	98	75-125	2	20		
Arsenic	mg/L	0.023	0.1	0.1	0.12	0.12	99	96	75-125	3	20		
Barium	mg/L	0.10	0.1	0.1	0.22	0.21	111	106	75-125	3	20		
Beryllium	mg/L	ND	0.1	0.1	0.11	0.11	113	110	75-125	3	20		
Boron	mg/L	0.38	1	1	1.5	1.5	109	109	75-125	0	20		
Cadmium	mg/L	0.00017J	0.1	0.1	0.099	0.097	99	97	75-125	2	20		
Calcium	mg/L	16.2	1	1	17.3	17.0	113	77	75-125	2	20		
Chromium	mg/L	ND	0.1	0.1	0.10	0.10	102	100	75-125	2	20		
Cobalt	mg/L	ND	0.1	0.1	0.097	0.097	97	97	75-125	0	20		
Lead	mg/L	ND	0.1	0.1	0.099	0.097	99	97	75-125	2	20		
Lithium	mg/L	0.0032J	0.1	0.1	0.11	0.11	111	107	75-125	4	20		
Molybdenum	mg/L	0.010	0.1	0.1	0.11	0.11	104	101	75-125	2	20		
Selenium	mg/L	ND	0.1	0.1	0.095	0.093	95	93	75-125	2	20		
Thallium	mg/L	ND	0.1	0.1	0.10	0.098	101	98	75-125	3	20		

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**QUALITY CONTROL DATA**

Project: Plant McManus App III & IV  
Pace Project No.: 2624543

QC Batch: 37440 Analysis Method: SM 2540C  
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids  
Associated Lab Samples: 2624543003, 2624543004, 2624543005, 2624543006, 2624543007, 2624543008, 2624543009, 2624543010

LABORATORY CONTROL SAMPLE: 169405

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	414	104	84-108	

SAMPLE DUPLICATE: 169406

Parameter	Units	2624543003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2860	2850	1	10	

SAMPLE DUPLICATE: 169407

Parameter	Units	2624635001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	543	548	1	10	

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**REPORT OF LABORATORY ANALYSIS**

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### QUALITY CONTROL DATA

Project: Plant McManus App III & IV  
Pace Project No.: 2624543

QC Batch: 37561 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 2624543001, 2624543002, 2624543003, 2624543004, 2624543005, 2624543006, 2624543007, 2624543008, 2624543009, 2624543010

METHOD BLANK: 170363 Matrix: Water  
Associated Lab Samples: 2624543001, 2624543002, 2624543003, 2624543004, 2624543005, 2624543006, 2624543007, 2624543008, 2624543009, 2624543010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.024	10/25/19 16:33	
Fluoride	mg/L	ND	0.30	0.029	10/25/19 16:33	
Sulfate	mg/L	ND	1.0	0.017	10/25/19 16:33	

LABORATORY CONTROL SAMPLE: 170364

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	10	10.8	108	90-110	
Fluoride	mg/L	10	10.8	108	90-110	
Sulfate	mg/L	10	9.9	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 170365 170366

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2624543001	Spike Conc.	Spike Conc.	MS Result						
Chloride	mg/L	21.4	10	10	28.5	28.6	71	72	90-110	0	15 M1
Fluoride	mg/L	0.046J	10	10	10.1	10.2	101	101	90-110	1	15
Sulfate	mg/L	31.9	10	10	35.4	35.4	35	36	90-110	0	15 M1

MATRIX SPIKE SAMPLE: 170367

Parameter	Units	2624543002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	33.1	10	38.9	58	90-110	M1
Fluoride	mg/L	0.044J	10	10.1	101	90-110	
Sulfate	mg/L	24.4	10	29.1	46	90-110	M1

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### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: Plant McManus App III & IV

Pace Project No.: 2624543

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### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

### ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

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

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant McManus App III & IV

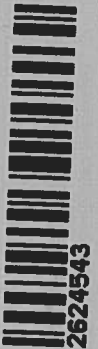
Pace Project No.: 2624543

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624543001	MCM-01	EPA 3005A	37347	EPA 6020B	37377
2624543002	MCM-02	EPA 3005A	37347	EPA 6020B	37377
2624543003	MCM-05	EPA 3005A	37347	EPA 6020B	37377
2624543004	MCM-08	EPA 3005A	37347	EPA 6020B	37377
2624543005	MCM-11	EPA 3005A	37347	EPA 6020B	37377
2624543006	MCM-16	EPA 3005A	37347	EPA 6020B	37377
2624543007	MCM-17	EPA 3005A	37347	EPA 6020B	37377
2624543008	FBL101619	EPA 3005A	37347	EPA 6020B	37377
2624543009	EQBL101619	EPA 3005A	37347	EPA 6020B	37377
2624543010	DUP-2	EPA 3005A	37347	EPA 6020B	37377
2624543001	MCM-01	EPA 7470A	37395	EPA 7470A	37466
2624543002	MCM-02	EPA 7470A	37395	EPA 7470A	37466
2624543003	MCM-05	EPA 7470A	37395	EPA 7470A	37466
2624543004	MCM-08	EPA 7470A	37395	EPA 7470A	37466
2624543005	MCM-11	EPA 7470A	37395	EPA 7470A	37466
2624543006	MCM-16	EPA 7470A	37395	EPA 7470A	37466
2624543007	MCM-17	EPA 7470A	37395	EPA 7470A	37466
2624543008	FBL101619	EPA 7470A	37395	EPA 7470A	37466
2624543009	EQBL101619	EPA 7470A	37395	EPA 7470A	37466
2624543010	DUP-2	EPA 7470A	37395	EPA 7470A	37466
2624543001	MCM-01	SM 2540C	37419		
2624543002	MCM-02	SM 2540C	37419		
2624543003	MCM-05	SM 2540C	37440		
2624543004	MCM-08	SM 2540C	37440		
2624543005	MCM-11	SM 2540C	37440		
2624543006	MCM-16	SM 2540C	37440		
2624543007	MCM-17	SM 2540C	37440		
2624543008	FBL101619	SM 2540C	37440		
2624543009	EQBL101619	SM 2540C	37440		
2624543010	DUP-2	SM 2540C	37440		
2624543001	MCM-01	EPA 300.0	37561		
2624543002	MCM-02	EPA 300.0	37561		
2624543003	MCM-05	EPA 300.0	37561		
2624543004	MCM-08	EPA 300.0	37561		
2624543005	MCM-11	EPA 300.0	37561		
2624543006	MCM-16	EPA 300.0	37561		
2624543007	MCM-17	EPA 300.0	37561		
2624543008	FBL101619	EPA 300.0	37561		
2624543009	EQBL101619	EPA 300.0	37561		
2624543010	DUP-2	EPA 300.0	37561		

### REPORT OF LABORATORY ANALYSIS

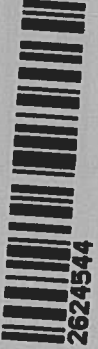
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WO#: 2624543



1 of 1

WO#: 2624544



**CHAIN-OF-CUSTODY / Analytical Request**  
The Chain-of-Custody is a LEGAL DOCUMENT. All relevant

**Section A**

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

**Section B**

**Required Project Information:**  
Report To: Jiju Abraham  
Copy To: Lauren Petty, Resolute  
Purchase Order #: SCS10382775  
Project Name: Plant McManus App. III & IV  
Project #:

**Section C**

**Invoice Information:**  
Attention: scsinvoices@southernco.com  
Company Name:  
Address:  
Pace Quote:  
Pace Project Manager: betsy.mcdaniel@pace.com  
Pace Profile #:

ITEM #	MATRIX CODE Drinking Water Waste Water Product Soil/Solid Oil Wipe Air Other Tissue	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		DATE	TIME	DATE	TIME	# OF CONTAINERS	Preservatives H2SO4 HNO3 HCl NaOH + Zn Ac Na2S2O3 Methanol Other	Y/N	Analyzes Test	Requester	TEMP IN C	Received on	Ice (Y/N)	Sealed (Y/N)	Custody (Y/N)	Cooler (Y/N)	Samples Intact (Y/N)
			START	END																
1	MCM-01	WTG	10/16/19	1332	10/17/19	1200	10/17/19	1200	5			X	*Rad.um 226&228 *TDS *Anions *Mercury							
2	MCM-02	WTG	10/16/19	1115	10/17/19	1200	10/17/19	1200	5			X								
3	MCM-05	WTG	10/16/19	1526	10/16/19	1522	10/16/19	1522	7			X								
4	MCM-08	WTG	10/16/19	1522	10/16/19	1547	10/16/19	1547	5			X								
5	MCM-11	WTG	10/16/19	0954	10/16/19	1037	10/16/19	1037	5			X								
6	MCM-16	WTG	10/16/19	1037	10/16/19	1435	10/16/19	1435	5			X								
7	MCM-17	WTG	10/16/19	1037	10/16/19	1040	10/16/19	1040	5			X								
8	FDL101619	WTG	10/16/19	1435	10/16/19	1435	10/16/19	1435	5			X								
9	EGBL101619	WTG	10/16/19	1040	10/16/19	1040	10/16/19	1040	5			X								
10	DVP-2	WTG	10/16/19	---	10/16/19	---	10/16/19	---	5			X								
11																				
12																				
* Metals App III & IV - EPA 601/602		Resolute / Veronicafy		10/17/19	1200	10/17/19 1200		Fcd Ex		R. Adelman		10/18/19 0950								
* TDS - SM 2540C																				
* Radium 226 & 228 EPA 9315 & 9320																				
* Anions - EPA 300																				
Mercury - EPA 7470																				
* Betsy McDaniel has list of parameters for App. III & IV.																				



Sample Condition Upon Receipt

WO#: 2624543

PM: BM Due Date: 10/25/19
CLIENT: GAPower-CCR

Client Name: GIA Power

WO#: 2624544

PM: BM Due Date: 11/15/19
CLIENT: GAPower-CCR

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

Tracking #: 7803 2388 8290

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

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

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

Cooler Temperature 0.3 Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 10/18/19

Table with 16 rows and 2 columns. Rows include Chain of Custody Present, Chain of Custody Filled Out, Chain of Custody Relinquished, Sampler Name & Signature on COC, Samples Arrived within Hold Time, Short Hold Time Analysis (<72hr), Rush Turn Around Time Requested, Sufficient Volume, Correct Containers Used, Containers Intact, Filtered volume received for Dissolved tests, Sample Labels match COC, All containers needing preservation have been checked, All containers needing preservation are found to be in compliance with EPA recommendation, exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Samples checked for dechlorination, Headspace in VOA Vials (>6mm), Trip Blank Present, Trip Blank Custody Seals Present, Pace Trip Blank Lot # (if purchased).

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

Person Contacted: Date/Time:

Comments/ Resolution:

3000 W28

Project Manager Review: Date:

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

November 26, 2019

Mr. Joju Abraham  
Georgia Power  
2480 Maner Road  
Atlanta, GA 30339

RE: Project: 2624544 PlantMcManusAppIII&IV  
Pace Project No.: 30331322

Dear Mr. Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on October 22, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Revision 1 - This report replaces the November 15, 2019 report. This project was revised on November 26, 2019 to include the Ra-226/228 calc for all samples. (Greensburg, PA)

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

Sincerely,



Jacquelyn Collins  
jacquelyn.collins@pacelabs.com  
(724)850-5612  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: 2624544 PlantMcManusAppIII&IV  
Pace Project No.: 30331322

### **Pace Analytical Services Pennsylvania**

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

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

## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 2624544 PlantMcManusAppIII&IV

Pace Project No.: 30331322

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624544001	MCM-01	Water	10/16/19 13:32	10/22/19 09:30
2624544002	MCM-02	Water	10/16/19 11:15	10/22/19 09:30
2624544003	MCM-05	Water	10/16/19 15:26	10/22/19 09:30
2624544004	MCM-08	Water	10/16/19 15:22	10/22/19 09:30
2624544005	MCM-11	Water	10/16/19 13:47	10/22/19 09:30
2624544006	MCM-16	Water	10/16/19 09:59	10/22/19 09:30
2624544007	MCM-17	Water	10/16/19 10:37	10/22/19 09:30
2624544008	FBL101619	Water	10/16/19 16:35	10/22/19 09:30
2624544009	EQBL101619	Water	10/16/19 16:40	10/22/19 09:30
2624544010	DUP-2	Water	10/16/19 00:01	10/22/19 09:30

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 2624544 PlantMcManusAppIII&IV  
Pace Project No.: 30331322

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2624544001	MCM-01	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624544002	MCM-02	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624544003	MCM-05	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624544004	MCM-08	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624544005	MCM-11	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624544006	MCM-16	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624544007	MCM-17	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624544008	FBL101619	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624544009	EQBL101619	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624544010	DUP-2	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2624544 PlantMcManusAppIII&IV  
Pace Project No.: 30331322

Sample: MCM-01		Lab ID: 2624544001	Collected: 10/16/19 13:32	Received: 10/22/19 09:30	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.424 ± 0.304 (0.532)</b> C:89% T:NA	pCi/L	11/07/19 08:48	13982-63-3	
Radium-228	EPA 9320	<b>0.977 ± 0.663 (1.26)</b> C:74% T:82%	pCi/L	11/08/19 20:22	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.40 ± 0.967 (1.79)</b>	pCi/L	11/13/19 14:00	7440-14-4	

Sample: MCM-02		Lab ID: 2624544002	Collected: 10/16/19 11:15	Received: 10/22/19 09:30	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.422 ± 0.265 (0.396)</b> C:94% T:NA	pCi/L	11/07/19 07:35	13982-63-3	
Radium-228	EPA 9320	<b>-0.142 ± 0.661 (1.57)</b> C:74% T:76%	pCi/L	11/08/19 20:24	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.422 ± 0.926 (1.97)</b>	pCi/L	11/26/19 15:04	7440-14-4	

Sample: MCM-05		Lab ID: 2624544003	Collected: 10/16/19 15:26	Received: 10/22/19 09:30	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.856 ± 0.360 (0.356)</b> C:94% T:NA	pCi/L	11/07/19 07:49	13982-63-3	
Radium-228	EPA 9320	<b>1.06 ± 0.677 (1.29)</b> C:77% T:86%	pCi/L	11/08/19 20:24	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.92 ± 1.04 (1.65)</b>	pCi/L	11/26/19 15:04	7440-14-4	

Sample: MCM-08		Lab ID: 2624544004	Collected: 10/16/19 15:22	Received: 10/22/19 09:30	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>18.3 ± 2.68 (0.0682)</b> C:95% T:NA	pCi/L	11/12/19 17:55	13982-63-3	
Radium-228	EPA 9320	<b>6.95 ± 1.69 (1.57)</b> C:72% T:82%	pCi/L	11/08/19 20:24	15262-20-1	
Total Radium	Total Radium Calculation	<b>25.3 ± 4.37 (1.64)</b>	pCi/L	11/26/19 15:04	7440-14-4	

Sample: MCM-11		Lab ID: 2624544005	Collected: 10/16/19 13:47	Received: 10/22/19 09:30	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.803 ± 0.358 (0.412)</b> C:89% T:NA	pCi/L	11/07/19 07:36	13982-63-3	
Radium-228	EPA 9320	<b>0.120 ± 0.539 (1.23)</b> C:77% T:84%	pCi/L	11/08/19 20:25	15262-20-1	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2624544 PlantMcManusAppIII&IV

Pace Project No.: 30331322

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: MCM-11</b> <b>Lab ID: 2624544005</b> Collected: 10/16/19 13:47      Received: 10/22/19 09:30      Matrix: Water						
PWS:      Site ID:      Sample Type:						
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	<b>0.923 ± 0.897 (1.64)</b>	pCi/L	11/26/19 15:04	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: MCM-16</b> <b>Lab ID: 2624544006</b> Collected: 10/16/19 09:59      Received: 10/22/19 09:30      Matrix: Water						
PWS:      Site ID:      Sample Type:						
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.921 ± 0.369 (0.332)</b> C:91% T:NA	pCi/L	11/07/19 07:36	13982-63-3	
Radium-228	EPA 9320	<b>0.940 ± 0.651 (1.26)</b> C:78% T:84%	pCi/L	11/08/19 20:25	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.86 ± 1.02 (1.59)</b>	pCi/L	11/26/19 15:04	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: MCM-17</b> <b>Lab ID: 2624544007</b> Collected: 10/16/19 10:37      Received: 10/22/19 09:30      Matrix: Water						
PWS:      Site ID:      Sample Type:						
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>3.96 ± 0.895 (0.347)</b> C:93% T:NA	pCi/L	11/07/19 07:36	13982-63-3	
Radium-228	EPA 9320	<b>3.54 ± 1.06 (1.36)</b> C:78% T:88%	pCi/L	11/08/19 20:25	15262-20-1	
Total Radium	Total Radium Calculation	<b>7.50 ± 1.96 (1.71)</b>	pCi/L	11/26/19 15:04	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: FBL101619</b> <b>Lab ID: 2624544008</b> Collected: 10/16/19 16:35      Received: 10/22/19 09:30      Matrix: Water						
PWS:      Site ID:      Sample Type:						
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.956 ± 0.431 (0.574)</b> C:85% T:NA	pCi/L	11/07/19 07:36	13982-63-3	
Radium-228	EPA 9320	<b>0.439 ± 0.586 (1.25)</b> C:77% T:89%	pCi/L	11/08/19 20:25	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.40 ± 1.02 (1.82)</b>	pCi/L	11/26/19 15:04	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: EQBL101619</b> <b>Lab ID: 2624544009</b> Collected: 10/16/19 16:40      Received: 10/22/19 09:30      Matrix: Water						
PWS:      Site ID:      Sample Type:						
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.598 ± 0.315 (0.396)</b> C:89% T:NA	pCi/L	11/07/19 07:36	13982-63-3	
Radium-228	EPA 9320	<b>0.356 ± 0.527 (1.14)</b> C:73% T:89%	pCi/L	11/08/19 20:25	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.954 ± 0.842 (1.54)</b>	pCi/L	11/26/19 15:04	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2624544 PlantMcManusAppIII&IV

Pace Project No.: 30331322

**Sample: DUP-2**      **Lab ID: 2624544010**      Collected: 10/16/19 00:01      Received: 10/22/19 09:30      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>1.08 ± 0.417 (0.416)</b> <b>C:91% T:NA</b>	pCi/L	11/07/19 07:36	13982-63-3	
Radium-228	EPA 9320	<b>1.09 ± 0.619 (1.12)</b> <b>C:77% T:87%</b>	pCi/L	11/08/19 20:25	15262-20-1	
Total Radium	Total Radium Calculation	<b>2.17 ± 1.04 (1.54)</b>	pCi/L	11/26/19 15:04	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: 2624544 PlantMcManusAppIII&IV

Pace Project No.: 30331322

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QC Batch:	368370	Analysis Method:	EPA 9320
QC Batch Method:	EPA 9320	Analysis Description:	9320 Radium 228
Associated Lab Samples:	2624544001, 2624544002, 2624544003, 2624544004, 2624544005, 2624544006, 2624544007, 2624544008, 2624544009, 2624544010		

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METHOD BLANK:	1787257	Matrix:	Water
Associated Lab Samples:	2624544001, 2624544002, 2624544003, 2624544004, 2624544005, 2624544006, 2624544007, 2624544008, 2624544009, 2624544010		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.0477 ± 0.582 (1.37) C:76% T:75%	pCi/L	11/08/19 19:28	

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

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: 2624544 PlantMcManusAppIII&IV

Pace Project No.: 30331322

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QC Batch:	368369	Analysis Method:	EPA 9315
QC Batch Method:	EPA 9315	Analysis Description:	9315 Total Radium
Associated Lab Samples:	2624544001, 2624544002, 2624544003, 2624544004, 2624544005, 2624544006, 2624544007, 2624544008, 2624544009, 2624544010		

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METHOD BLANK:	1787256	Matrix:	Water
Associated Lab Samples:	2624544001, 2624544002, 2624544003, 2624544004, 2624544005, 2624544006, 2624544007, 2624544008, 2624544009, 2624544010		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.352 ± 0.285 (0.530) C:94% T:NA	pCi/L	11/07/19 07:21	

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

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## QUALIFIERS

Project: 2624544 PlantMcManusAppIII&IV

Pace Project No.: 30331322

### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

### LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

## REPORT OF LABORATORY ANALYSIS

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# Chain of Custody



Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: GA

Cert. Needed:  Yes  No

Workorder: 2624544    Workorder Name: Plant McManus App III & IV

Owner Received Date: 10/18/2019    Results Requested By: 11/15/2019

Report To: Requested Analysis

Betsy McDaniel  
Pace Analytical Atlanta  
110 Technology Parkway  
Peachtree Corners, GA 30092  
Phone (770)734-4200

Pace Analytical Pittsburgh  
1638 Roseytown Road  
Suites 2,3, & 4  
Greensburg, PA 15601  
Phone (724)850-5600

Radium 226/228 (EPA 9315/9320)

WO#: 30331322



Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers			LAB USE ONLY
						HNO3			
1	MCM-01	PS	10/16/2019 13:32	2624544001	Water	2			001
2	MCM-02	PS	10/16/2019 11:15	2624544002	Water	2			002
3	MCM-05	PS	10/16/2019 15:26	2624544003	Water	4			003
4	MCM-08	PS	10/16/2019 15:22	2624544004	Water	2			004
5	MCM-11	PS	10/16/2019 13:47	2624544005	Water	2			005
6	MCM-16	PS	10/16/2019 09:59	2624544006	Water	2			006
7	MCM-17	PS	10/16/2019 10:37	2624544007	Water	2			007
8	FBL101619	PS	10/16/2019 16:35	2624544008	Water	2			008
9	EOBL101619	PS	10/16/2019 16:40	2624544009	Water	2			009
10	DUP-2	PS	10/16/2019 00:00	2624544010	Water	2			010

Transfers		Released By	Date/Time	Received By	Date/Time
1				<i>[Signature]</i>	10/22/19 0930
2					
3					

Cooler Temperature on Receipt: \_\_\_\_\_ °C    Custody Seal: Y or N    Received on Ice: Y or N    Samples Intact: Y or N

\*\*\*In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pittsburgh Lab Sample Condition Upon Receipt



Client Name: Pace GA

Project # # - 30331322

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Other

Tracking #: 1096 9308 4299

Label <u>OV</u>
LIMS Login <u>OV</u>

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

Thermometer Used NA    Type of Ice: Wet Blue  None

Cooler Temperature \_\_\_\_\_ Observed Temp \_\_\_\_\_ °C    Correction Factor: \_\_\_\_\_ °C    Final Temp: \_\_\_\_\_ °C

Temp should be above freezing to 6°C

Comments:	pH paper Lot#			Date and Initials of person examining contents: <u>10/22/19 OVB</u>
	Yes	No	N/A	
Chain of Custody Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.
Chain of Custody Relinquished:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.
Sample Labels match COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.
-Includes date/time/ID      Matrix: <u>WT</u>				
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.
Short Hold Time Analysis (<72hr remaining):	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.
Rush Turn Around Time Requested:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.
Sufficient Volume:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9. <u>10/22/19 OVB see comments</u>
Correct Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.
-Pace Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Containers Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11.
Orthophosphate field filtered	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12.
Hex Cr Aqueous sample field filtered	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	13.
Organic Samples checked for dechlorination:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	14.
Filtered volume received for Dissolved tests	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15.
All containers have been checked for preservation.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	16. <u>PH-12</u>
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix				
All containers meet method preservation requirements.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Initial when completed: <u>OVB</u> Date/time of preservation: _____
				Lot # of added preservative: _____
Headspace in VOA Vials (>6mm):	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	17.
Trip Blank Present:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	18.
Trip Blank Custody Seals Present	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Rad Samples Screened < 0.5 mrem/hr	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Initial when completed: <u>OVB</u> Date: <u>10/22/19</u>

Client Notification/ Resolution:

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Contacted By: \_\_\_\_\_

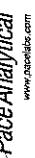
Comments/ Resolution: One bottle from Sample Dup. 2 received w/ lid off - spilled in water approximately 1400 mL left in bottle - marked as low volume

A check in this box indicates that additional information has been stored in reports.

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

\*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

# Quality Control Sample Performance Assessment



**Analyst Must Manually Enter All Fields Highlighted in Yellow.**

Test: Ra-226  
Analyst: LAL  
Date: 11/6/2019  
Worklist: 50622  
Matrix: DW

Method Blank Assessment	
MB Sample ID	1787256
MB concentration:	0.352
M/B Counting Uncertainty:	0.281
MB MDC:	0.530
MB Numerical Performance Indicator:	2.45
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	
LCSID (Y or N)?	N
LCS50622	LCS50622
Count Date:	11/7/2019
Spike I.D.:	19-033
Decay Corrected Spike Concentration (pCi/mL):	24.053
Volume Used (mL):	0.10
Aliquot Volume (L, g, F):	0.519
Target Conc. (pCi/L, g, F):	4.632
Uncertainty (Calculated):	0.056
Result (pCi/L, g, F):	4.973
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.765
Numerical Performance Indicator:	0.87
Percent Recovery:	107.36%
Status vs Numerical Indicator:	N/A
Status vs Recovery:	Pass
Upper % Recovery Limits:	125%
Lower % Recovery Limits:	75%

Duplicate Sample Assessment	
Sample I.D.:	2624542003
Duplicate Sample I.D.:	2624542003DUP
Sample Result (pCi/L, g, F):	3.496
Sample Result Counting Uncertainty (pCi/L, g, F):	0.615
Sample Duplicate Result (pCi/L, g, F):	3.553
Sample Duplicate Counting Uncertainty (pCi/L, g, F):	0.626
Are sample and/or duplicate results below RL?	See Below #
Duplicate Numerical Performance Indicator:	-0.128
Duplicate RPD:	1.63%
Duplicate Status vs Numerical Indicator:	N/A
Duplicate Status vs RPD:	Pass
% RPD Limit:	25%

Sample Matrix Spike Control Assessment		MS/MSD 1	MS/MSD 2
Sample Collection Date: Sample I.D. Sample MS I.D. Sample MSD I.D. Spike I.D.:			
MS/MSD Decay Corrected Spike Concentration (pCi/mL): Spike Volume Used in MS (mL): Spike Volume Used in MSD (mL): MS Aliquot (L, g, F): MSD Aliquot (L, g, F): MS Target Conc. (pCi/L, g, F): MSD Target Conc. (pCi/L, g, F): MS Spike Uncertainty (calculated): MSD Spike Uncertainty (calculated):			
Sample Result Counting Uncertainty (pCi/L, g, F): Sample Matrix Spike Result:			
Matrix Spike Result Counting Uncertainty (pCi/L, g, F): Sample Matrix Spike Duplicate Result: Sample Matrix Spike Duplicate Counting Uncertainty (pCi/L, g, F): MS Numerical Performance Indicator: MSD Numerical Performance Indicator:			
MS Percent Recovery: MSD Percent Recovery: MS Status vs Numerical Indicator: MSD Status vs Numerical Indicator: MS Status vs Recovery: MSD Status vs Recovery: MS/MSD Upper % Recovery Limits: MS/MSD Lower % Recovery Limits:			

Matrix Spike/Matrix Spike Duplicate Sample Assessment	
Sample I.D. Sample MS I.D. Sample MSD I.D. Sample Matrix Spike Result: Sample Matrix Spike Duplicate Result: Sample Matrix Spike Duplicate Counting Uncertainty (pCi/L, g, F): Duplicate Numerical Performance Indicator: (Based on the Percent Recoveries) MS/ MSD Duplicate RPD: MS/ MSD Duplicate Status vs Numerical Indicator: MS/ MSD Duplicate Status vs RPD: % RPD Limit:	

# Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

LAM 11/13/19

# Quality Control Sample Performance Assessment



Analyst Must Manually Enter All Fields Highlighted in Yellow.

Test: Re-226  
Analyst: LAL  
Date: 11/6/2019  
Worklist: 50622  
Matrix: DW

Method Blank Assessment	
MB Sample ID	1787256
MB Concentration:	0.352
M/B Counting Uncertainty:	0.281
MB MDC:	0.530
MB Numerical Performance Indicator:	2.45
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCS/D (Y or N)?	
	LCS-50622	Y
Count Date:	11/7/2019	LCS-50622
Spike I.D.:	19-033	11/7/2019
Decay Corrected Spike Concentration (pCi/mL):	24.053	19-033
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.519	0.512
Target Conc. (pCi/L, g, F):	4.632	4.700
Uncertainty (Calculated):	0.056	0.056
Result (pCi/L, g, F):	4.973	4.328
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.765	0.705
Numerical Performance Indicator:	0.87	-1.03
Percent Recovery:	107.36%	92.09%
Status vs Numerical Indicator:	N/A	N/A
Upper % Recovery Limits:	125%	Pass
Lower % Recovery Limits:	75%	75%

Duplicate Sample Assessment	
Sample I.D.:	LCS-50622
Duplicate Sample I.D.:	LCS-50622
Sample Result (pCi/L, g, F):	4.973
Sample Result Counting Uncertainty (pCi/L, g, F):	0.765
Sample Duplicate Result (pCi/L, g, F):	4.328
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.705
Are sample and/or duplicate results below RL?	NO
Duplicate Numerical Performance Indicator:	1.215
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	15.31%
Duplicate Status vs Numerical Indicator:	N/A
Duplicate Status vs RPD:	Pass
% RPD Limit:	25%

# Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date: Sample I.D. Sample MS I.D. Sample MSD I.D. Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL): Spike Volume Used in MS (mL): Spike Volume Used in MSD (mL): MS Aliquot (L, g, F): MS Target Conc. (pCi/L, g, F): MSD Aliquot (L, g, F): MSD Target Conc. (pCi/L, g, F): MS Spike Uncertainty (calculated): MSD Spike Uncertainty (calculated):		
Sample Result: Sample Result Counting Uncertainty (pCi/L, g, F): Sample Matrix Spike Result: Matrix Spike Result Counting Uncertainty (pCi/L, g, F): Sample Matrix Spike Duplicate Result: Sample Matrix Spike Duplicate Counting Uncertainty (pCi/L, g, F): MS Numerical Performance Indicator: MSD Numerical Performance Indicator:		
MS Percent Recovery: MSD Percent Recovery: MS Status vs Numerical Indicator: MSD Status vs Numerical Indicator: MS Status vs Recovery: MSD Status vs Recovery: MS/MSD Upper % Recovery Limits: MS/MSD Lower % Recovery Limits:		

Matrix Spike/Matrix Spike Duplicate Sample Assessment
Sample I.D. Sample MS I.D. Sample MSD I.D. Sample Matrix Spike Result: Sample Matrix Spike Duplicate Result: Sample Matrix Spike Duplicate Counting Uncertainty (pCi/L, g, F): Duplicate Numerical Performance Indicator: (Based on the Percent Recoveries) MS/MSD Duplicate RPD: MS/MSD Duplicate Status vs Numerical Indicator: MS/MSD Duplicate Status vs RPD: % RPD Limit:

UAM 11/13/19

# Quality Control Sample Performance Assessment



**Analyst Must Manually Enter All Fields Highlighted in Yellow.**

Test: Ra-228  
Analyst: VAL  
Date: 11/14/2019  
Worklist: 50623  
Matrix: WT

Method Blank Assessment	
MB Sample ID	1787257
MB concentration:	-0.048
M/B 2 Sigma CSU:	0.582
MB MDC:	1.371
MB Numerical Performance Indicator:	-0.16
MB Status vs Numerical Indicator:	Pass
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCS/MSD (Y or N)?	
	LCS/MSD	Y
Count Date:	11/8/2019	LCS/MSD
Spike I.D.:	19-026	19-026
Decay Corrected Spike Concentration (pCi/mL):	34.783	34.783
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.808	0.810
Target Conc. (pCi/L, g, F):	4.302	4.296
Uncertainty (Calculated):	0.211	0.210
Result (pCi/L, g, F):	3.306	4.684
LCS/MSD 2 Sigma CSU (pCi/L, g, F):	0.853	1.079
Numerical Performance Indicator:	-2.22	0.69
Percent Recovery:	76.85%	109.04%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Duplicate Sample Assessment	
Sample I.D.:	LCS/MSD
Duplicate Sample I.D.:	LCS/MSD
Sample Result (pCi/L, g, F):	3.306
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.853
Sample Duplicate Result (pCi/L, g, F):	4.684
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.079
Are sample and/or duplicate results below RL?	NO
Duplicate Numerical Performance Indicator:	-1.963
(Based on the LCS/MSD Percent Recoveries) Duplicate RPD:	34.64%
Duplicate Status vs Numerical Indicator:	Pass
Duplicate Status vs RPD:	Pass
% RPD Limit:	36%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.:		
Sample MS I.D.:		
Sample MSD I.D.:		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc. (pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Matrix Spike/Matrix Spike Duplicate Sample Assessment	
Sample I.D.:	
Sample MS I.D.:	
Sample MSD I.D.:	
Sample Matrix Spike Result:	
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):	
Sample Matrix Spike Duplicate Result:	
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):	
Duplicate Numerical Performance Indicator:	
(Based on the Percent Recoveries) MS/MSD Duplicate RPD:	
MS/MSD Duplicate Status vs Numerical Indicator:	
MS/MSD Duplicate Status vs RPD:	
% RPD Limit:	

# Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

*Handwritten signature/initials*

*Handwritten signature/initials*

December 17, 2019

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

RE: Project: PLANT MCMANUS APP. III&IV  
Pace Project No.: 2624794

Dear Joju Abraham:

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

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

Sincerely,



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

Enclosures

cc: Lea Millet, Resolute Environmental & Water Resources  
Lauren Petty, Southern Company Services, Inc.  
Kevin Stephenson, Resolute Environmental & Water  
Resources Consulting, LLC  
Rebecca Thornton, Pace Analytical Atlanta  
Stephen Wilson, Resolute Environmental & Water  
Resources Consulting, LLC



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: PLANT MCMANUS APP. III&IV

Pace Project No.: 2624794

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### **Pace Analytical Services Atlanta**

110 Technology Parkway Peachtree Corners, GA 30092

Florida DOH Certification #: E87315

Georgia DW Inorganics Certification #: 812

Georgia DW Microbiology Certification #: 812

North Carolina Certification #: 381

South Carolina Certification #: 98011001

Virginia Certification #: 460204

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## SAMPLE SUMMARY

Project: PLANT MCMANUS APP. III&IV

Pace Project No.: 2624794

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Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624794001	MCM-06	Water	10/17/19 10:54	10/18/19 09:50
2624794002	MCM-07	Water	10/17/19 10:59	10/18/19 09:50

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**SAMPLE ANALYTE COUNT**

Project: PLANT MCMANUS APP. III&IV  
Pace Project No.: 2624794

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2624794001	MCM-06	EPA 6020B	CSW	13
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624794002	MCM-07	EPA 6020B	CSW	13
		SM 2540C	MZP	1
		EPA 300.0	MWB	3

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## ANALYTICAL RESULTS

Project: PLANT MCMANUS APP. III&IV

Pace Project No.: 2624794

Sample: MCM-06		Lab ID: 2624794001		Collected: 10/17/19 10:54		Received: 10/18/19 09:50		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	<b>0.00090J</b>	mg/L	0.0030	0.00027	1	10/28/19 20:04	10/29/19 19:33	7440-36-0	B	
Arsenic	<b>0.34</b>	mg/L	0.0050	0.00035	1	10/28/19 20:04	10/29/19 19:33	7440-38-2		
Barium	<b>0.13</b>	mg/L	0.010	0.00049	1	10/28/19 20:04	10/29/19 19:33	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	10/28/19 20:04	10/29/19 19:33	7440-41-7		
Boron	<b>1.3</b>	mg/L	0.040	0.0049	1	10/28/19 20:04	10/29/19 19:33	7440-42-8		
Calcium	<b>309</b>	mg/L	5.0	0.55	50	10/28/19 20:04	10/30/19 19:43	7440-70-2		
Chromium	<b>0.0015J</b>	mg/L	0.010	0.00039	1	10/28/19 20:04	10/29/19 19:33	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	10/28/19 20:04	10/29/19 19:33	7440-48-4		
Lead	<b>0.00012J</b>	mg/L	0.0050	0.000046	1	10/28/19 20:04	10/29/19 19:33	7439-92-1		
Lithium	<b>0.12</b>	mg/L	0.030	0.00078	1	10/28/19 20:04	10/29/19 19:33	7439-93-2		
Molybdenum	<b>0.0017J</b>	mg/L	0.010	0.00095	1	10/28/19 20:04	10/29/19 19:33	7439-98-7		
Selenium	<b>0.0066J</b>	mg/L	0.010	0.0013	1	10/28/19 20:04	10/29/19 19:33	7782-49-2		
Thallium	<b>0.000076J</b>	mg/L	0.0010	0.000052	1	10/28/19 20:04	10/29/19 19:33	7440-28-0		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>16100</b>	mg/L	10.0	10.0	1		10/25/19 16:37		H1	
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>9930</b>	mg/L	1000	24.0	1000		11/05/19 18:35	16887-00-6		
Fluoride	ND	mg/L	0.30	0.029	1		10/26/19 03:40	16984-48-8		
Sulfate	<b>507</b>	mg/L	500	8.5	500		11/05/19 01:58	14808-79-8		

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: PLANT MCMANUS APP. III&IV  
Pace Project No.: 2624794

Sample: MCM-07		Lab ID: 2624794002		Collected: 10/17/19 10:59		Received: 10/18/19 09:50		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	10/28/19 20:04	10/29/19 19:39	7440-36-0	
Arsenic	<b>0.0046J</b>	mg/L	0.0050	0.00035	1	10/28/19 20:04	10/29/19 19:39	7440-38-2	
Barium	<b>0.35</b>	mg/L	0.010	0.00049	1	10/28/19 20:04	10/29/19 19:39	7440-39-3	
Beryllium	<b>0.000078J</b>	mg/L	0.0030	0.000074	1	10/28/19 20:04	10/29/19 19:39	7440-41-7	
Boron	<b>1.1</b>	mg/L	0.040	0.0049	1	10/28/19 20:04	10/29/19 19:39	7440-42-8	
Calcium	<b>260</b>	mg/L	5.0	0.55	50	10/28/19 20:04	10/30/19 19:48	7440-70-2	
Chromium	<b>0.0019J</b>	mg/L	0.010	0.00039	1	10/28/19 20:04	10/29/19 19:39	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	10/28/19 20:04	10/29/19 19:39	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	10/28/19 20:04	10/29/19 19:39	7439-92-1	
Lithium	<b>0.096</b>	mg/L	0.030	0.00078	1	10/28/19 20:04	10/29/19 19:39	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	10/28/19 20:04	10/29/19 19:39	7439-98-7	
Selenium	<b>0.0049J</b>	mg/L	0.010	0.0013	1	10/28/19 20:04	10/29/19 19:39	7782-49-2	M1
Thallium	ND	mg/L	0.0010	0.000052	1	10/28/19 20:04	10/29/19 19:39	7440-28-0	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>13200</b>	mg/L	10.0	10.0	1		10/25/19 16:37		H1
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>8210</b>	mg/L	500	12.0	500		11/05/19 02:20	16887-00-6	
Fluoride	ND	mg/L	0.30	0.029	1		10/26/19 04:02	16984-48-8	
Sulfate	<b>1230</b>	mg/L	500	8.5	500		11/05/19 02:20	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: PLANT MCMANUS APP. III&IV  
Pace Project No.: 2624794

QC Batch: 37696 Analysis Method: EPA 6020B  
QC Batch Method: EPA 3005A Analysis Description: 6020B MET  
Associated Lab Samples: 2624794001, 2624794002

METHOD BLANK: 171182 Matrix: Water  
Associated Lab Samples: 2624794001, 2624794002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	0.00029J	0.0030	0.00027	10/29/19 19:20	
Arsenic	mg/L	ND	0.0050	0.00035	10/29/19 19:20	
Barium	mg/L	ND	0.010	0.00049	10/29/19 19:20	
Beryllium	mg/L	ND	0.0030	0.000074	10/29/19 19:20	
Boron	mg/L	ND	0.040	0.0049	10/29/19 19:20	
Calcium	mg/L	ND	0.10	0.011	10/29/19 19:20	
Chromium	mg/L	ND	0.010	0.00039	10/29/19 19:20	
Cobalt	mg/L	ND	0.0050	0.00030	10/29/19 19:20	
Lead	mg/L	ND	0.0050	0.000046	10/29/19 19:20	
Lithium	mg/L	ND	0.030	0.00078	10/29/19 19:20	
Molybdenum	mg/L	ND	0.010	0.00095	10/29/19 19:20	
Selenium	mg/L	ND	0.010	0.0013	10/29/19 19:20	
Thallium	mg/L	ND	0.0010	0.000052	10/29/19 19:20	

LABORATORY CONTROL SAMPLE: 171183

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.11	113	80-120	
Arsenic	mg/L	0.1	0.10	100	80-120	
Barium	mg/L	0.1	0.10	104	80-120	
Beryllium	mg/L	0.1	0.10	103	80-120	
Boron	mg/L	1	0.99	99	80-120	
Calcium	mg/L	1	1.0	101	80-120	
Chromium	mg/L	0.1	0.11	107	80-120	
Cobalt	mg/L	0.1	0.11	106	80-120	
Lead	mg/L	0.1	0.11	106	80-120	
Lithium	mg/L	0.1	0.11	106	80-120	
Molybdenum	mg/L	0.1	0.10	104	80-120	
Selenium	mg/L	0.1	0.10	102	80-120	
Thallium	mg/L	0.1	0.11	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 171184 171185

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		2624794002	Spike Conc.	Spike Conc.	Result							Result
Antimony	mg/L	ND	0.1	0.1	0.11	0.11	111	112	75-125	0	20	
Arsenic	mg/L	0.0046J	0.1	0.1	0.097	0.098	93	93	75-125	0	20	
Barium	mg/L	0.35	0.1	0.1	0.46	0.46	108	109	75-125	0	20	

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

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: PLANT MCMANUS APP. III&IV

Pace Project No.: 2624794

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 171184		171185		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2624794002 Result	MS Spike Conc.	MSD Spike Conc.									
Beryllium	mg/L	0.000078J	0.1	0.1	0.090	0.091	90	91	75-125	1	20		
Boron	mg/L	1.1	1	1	1.9	1.9	78	81	75-125	1	20		
Calcium	mg/L	260	1	1	269	272	841	1200	75-125	1	20		
Chromium	mg/L	0.0019J	0.1	0.1	0.11	0.11	104	103	75-125	1	20		
Cobalt	mg/L	ND	0.1	0.1	0.095	0.094	95	94	75-125	1	20		
Lead	mg/L	ND	0.1	0.1	0.095	0.096	95	96	75-125	1	20		
Lithium	mg/L	0.096	0.1	0.1	0.20	0.20	101	102	75-125	0	20		
Molybdenum	mg/L	ND	0.1	0.1	0.11	0.11	109	110	75-125	0	20		
Selenium	mg/L	0.0049J	0.1	0.1	0.051	0.048	46	43	75-125	5	20	M1	
Thallium	mg/L	ND	0.1	0.1	0.099	0.098	99	98	75-125	1	20		

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: PLANT MCMANUS APP. III&IV  
Pace Project No.: 2624794

QC Batch: 37558 Analysis Method: SM 2540C  
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids  
Associated Lab Samples: 2624794001, 2624794002

LABORATORY CONTROL SAMPLE: 170357

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	399	100	84-108	

SAMPLE DUPLICATE: 170358

Parameter	Units	2624635002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1550	1650	6	10	

SAMPLE DUPLICATE: 170359

Parameter	Units	2624682011 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1120	1090	2	10	

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### QUALITY CONTROL DATA

Project: PLANT MCMANUS APP. III&IV

Pace Project No.: 2624794

QC Batch: 37561 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 2624794001, 2624794002

METHOD BLANK: 170363 Matrix: Water

Associated Lab Samples: 2624794001, 2624794002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.30	0.029	10/25/19 16:33	

LABORATORY CONTROL SAMPLE: 170364

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	10	10.8	108	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 170365 170366

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		2624543001 Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Fluoride	mg/L	0.046J	10	10	10.1	10.2	101	101	90-110	1	15		

MATRIX SPIKE SAMPLE: 170367

Parameter	Units	2624543002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.044J	10	10.1	101	90-110	

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### QUALITY CONTROL DATA

Project: PLANT MCMANUS APP. III&IV  
Pace Project No.: 2624794

QC Batch: 38283 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 2624794001, 2624794002

METHOD BLANK: 173780 Matrix: Water  
Associated Lab Samples: 2624794001, 2624794002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.10J	1.0	0.024	11/06/19 00:40	
Sulfate	mg/L	0.066J	1.0	0.017	11/06/19 00:40	

LABORATORY CONTROL SAMPLE: 173781

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	10	10.1	101	90-110	
Sulfate	mg/L	10	10.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 173782 173783

Parameter	Units	2625229001		173783		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Chloride	mg/L	2080	10	10	626	625	-14600	-14600	90-110	0	15
Sulfate	mg/L	5.8	10	10	17.1	16.9	113	111	90-110	1	15 M1

MATRIX SPIKE SAMPLE: 173784

Parameter	Units	2625211001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	8.4	20	27.3	94	90-110	
Sulfate	mg/L	ND	20	ND	0	90-110 M1	

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### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: PLANT MCMANUS APP. III&IV

Pace Project No.: 2624794

---

### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

### ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

H1 Analysis conducted outside the EPA method holding time.

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

## REPORT OF LABORATORY ANALYSIS

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**QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project: PLANT MCMANUS APP. III&IV  
Pace Project No.: 2624794

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624794001	MCM-06	EPA 3005A	37696	EPA 6020B	37751
2624794002	MCM-07	EPA 3005A	37696	EPA 6020B	37751
2624794001	MCM-06	SM 2540C	37558		
2624794002	MCM-07	SM 2540C	37558		
2624794001	MCM-06	EPA 300.0	37561		
2624794001	MCM-06	EPA 300.0	38283		
2624794002	MCM-07	EPA 300.0	37561		
2624794002	MCM-07	EPA 300.0	38283		

**REPORT OF LABORATORY ANALYSIS**

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# CHAIN-OF-CUSTODY / Analytical Request Document

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

<b>Section A</b>		<b>Section B</b>		<b>Section C</b>	
<b>Required Client Information:</b>		<b>Required Project Information:</b>		<b>Invoice Information:</b>	
Company: Georgia Power - Coal Combustion Residuals	Report To: Joji Abraham	Attention: scsinvoites@southernco.com	Page: 1 Of 1		
Address: 2480 Maner Road	Copy To: Lauren Petty, Resolute	Company Name:			
Atlanta, GA 30339		Address:	Regulatory Agency		
Email: jbraham@southernco.com	Purchase Order #: SCS10382775	Pace Quote:	State / Location		
Phone: (404)506-7239	Project Name: Plant McManus App. III & IV	Pace Project Manager: beisy.mcdaniel@pacelabs.com	GA		
Requested Due Date:	Project #:	Pace Profile #:			

ITEM #	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives							Analyses Test Y/N	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	
			START DATE	START TIME			END DATE	END TIME	Unpreserved	H2SO4	HNO3	HCl	NaOH + Zn Ac				Na2S2O3
1	MTG	MTG	10/17/19	1054		52		3							X	* Metals App. III & IV	
2	MTG	MTG	10/17/19	1059		52		3							X	* Metals App. III & IV	
3															X	* TDS	
4															X	* Radium 226 & 228	
5															X	* Anions	
6															X	* Mercury	

WO#: 2624794

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
* Metals App III & IV - EPA 4010/1029 Resolute/Veronica Fay	Veronica Fay	10/17/19	1200	FedEx	10/17/19	1200	
* TDS - SM 2540C					10/18	9:50	4.6
* Radium 226 & 228 - EPA 9315X 4320							
* Anions - EPA 300							

**SAMPLER NAME AND SIGNATURE**

PRINT Name of SAMPLER: Joe Booth & Veronica Fay

SIGNATURE of SAMPLER:

DATE Signed: 10/17/19

Sample Condition Upon Receipt

WO#: 2624794

Due Date: 10/25/19

PM: BM

CLIENT: GAPower-CCR

Pace Analytical

Client Name: GP-Mcmenis

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Other \_\_\_\_\_

Tracking #: \_\_\_\_\_

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

Packing Material:  Bubble Wrap  Bubble Bags  None  Other \_\_\_\_\_

Thermometer Used 083 Type of Ice: Wet Blue None  Samples on ice, cooling process has begun

Cooler Temperature 4.6 Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Date and Initials of person examining contents: \_\_\_\_\_

Comments:

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

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

3000 W28

Project Manager Review: \_\_\_\_\_

Date: \_\_\_\_\_

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

November 19, 2019

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

RE: Project: PLANT MCMANUS APP. III&IV RAD  
Pace Project No.: 2624793

Dear Joju Abraham:

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

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

Sincerely,



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

Enclosures

cc: Lauren Petty, Southern Company Services, Inc.  
Kevin Stephenson, Resolute Environmental & Water  
Resources Consulting, LLC  
Rebecca Thornton, Pace Analytical Atlanta  
Stephen Wilson, Resolute Environmental & Water  
Resources Consulting, LLC



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: PLANT MCMANUS APP. III&IV RAD  
Pace Project No.: 2624793

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### **Pace Analytical Services Pennsylvania**

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

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

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: PLANT MCMANUS APP. III&IV RAD  
Pace Project No.: 2624793

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624793001	MCM-06	Water	10/17/19 10:54	10/18/19 09:50
2624793002	MCM-07	Water	10/17/19 10:59	10/18/19 09:50

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: PLANT MCMANUS APP. III&IV RAD  
Pace Project No.: 2624793

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2624793001	MCM-06	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624793002	MCM-07	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCMANUS APP. III&IV RAD

Pace Project No.: 2624793

**Sample: MCM-06**      **Lab ID: 2624793001**      Collected: 10/17/19 10:54      Received: 10/18/19 09:50      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>4.83 ± 1.08 (0.438)</b> C:75% T:NA	pCi/L	11/15/19 08:32	13982-63-3	
Radium-228	EPA 9320	<b>3.02 ± 0.892 (1.16)</b> C:75% T:72%	pCi/L	11/12/19 12:14	15262-20-1	
Total Radium	Total Radium Calculation	<b>7.85 ± 1.97 (1.60)</b>	pCi/L	11/18/19 14:56	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT MCMANUS APP. III&IV RAD

Pace Project No.: 2624793

**Sample: MCM-07**      **Lab ID: 2624793002**      Collected: 10/17/19 10:59      Received: 10/18/19 09:50      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>3.82 ± 0.901 (0.470)</b> C:81% T:NA	pCi/L	11/15/19 08:32	13982-63-3	
Radium-228	EPA 9320	<b>4.15 ± 0.982 (0.831)</b> C:80% T:79%	pCi/L	11/12/19 12:15	15262-20-1	
Total Radium	Total Radium Calculation	<b>7.97 ± 1.88 (1.30)</b>	pCi/L	11/18/19 14:56	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT MCMANUS APP. III&IV RAD

Pace Project No.: 2624793

QC Batch: 369306

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2624793001, 2624793002

METHOD BLANK: 1791694

Matrix: Water

Associated Lab Samples: 2624793001, 2624793002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.317 ± 0.325 (0.673) C:79% T:91%	pCi/L	11/12/19 12:14	

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

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT MCMANUS APP. III&IV RAD

Pace Project No.: 2624793

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QC Batch:	369307	Analysis Method:	EPA 9315
QC Batch Method:	EPA 9315	Analysis Description:	9315 Total Radium
Associated Lab Samples:	2624793001, 2624793002		

---

METHOD BLANK:	1791695	Matrix:	Water
Associated Lab Samples:	2624793001, 2624793002		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.330 ± 0.234 (0.359) C:92% T:NA	pCi/L	11/15/19 08:32	

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

### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: PLANT MCMANUS APP. III&IV RAD

Pace Project No.: 2624793

---

### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

### LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PLANT MCMANUS APP. III&IV RAD

Pace Project No.: 2624793

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624793001	MCM-06	EPA 9315	369307		
2624793002	MCM-07	EPA 9315	369307		
2624793001	MCM-06	EPA 9320	369306		
2624793002	MCM-07	EPA 9320	369306		
2624793001	MCM-06	Total Radium Calculation	371524		
2624793002	MCM-07	Total Radium Calculation	371524		

### REPORT OF LABORATORY ANALYSIS

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December 05, 2019

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

RE: Project: PLANT MCMANUS CCR  
Pace Project No.: 2626070

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on November 22, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



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

Enclosures

cc: Lauren Petty, Southern Company Services, Inc.  
Kevin Stephenson, Resolute Environmental & Water  
Resources Consulting, LLC  
Rebecca Thornton, Pace Analytical Atlanta  
Stephen Wilson, Resolute Environmental & Water  
Resources Consulting, LLC



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## CERTIFICATIONS

Project: PLANT MCMANUS CCR

Pace Project No.: 2626070

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### **Pace Analytical Services Atlanta**

110 Technology Parkway Peachtree Corners, GA 30092

Florida DOH Certification #: E87315

Georgia DW Inorganics Certification #: 812

Georgia DW Microbiology Certification #: 812

North Carolina Certification #: 381

South Carolina Certification #: 98011001

Virginia Certification #: 460204

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: PLANT MCMANUS CCR

Pace Project No.: 2626070

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2626070001	MCM-01	Water	11/20/19 15:12	11/22/19 08:44
2626070002	MCM-02	Water	11/19/19 15:48	11/22/19 08:44
2626070003	MCM-04	Water	11/20/19 09:24	11/22/19 08:44
2626070004	MCM-08	Water	11/19/19 13:54	11/22/19 08:44
2626070005	DUP-1	Water	11/19/19 00:00	11/22/19 08:44
2626070006	FBL111919	Water	11/19/19 16:24	11/22/19 08:44
2626070007	EQBL111919	Water	11/19/19 16:30	11/22/19 08:44
2626070008	MCM-05	Water	11/20/19 11:16	11/22/19 08:44
2626070009	MCM-07	Water	11/20/19 13:40	11/22/19 08:44
2626070010	MCM-14	Water	11/21/19 08:36	11/22/19 08:44
2626070011	MCM-17	Water	11/21/19 11:36	11/22/19 08:44

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### SAMPLE ANALYTE COUNT

Project: PLANT MCMANUS CCR  
Pace Project No.: 2626070

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2626070001	MCM-01	EPA 6020B	CSW	1
2626070002	MCM-02	EPA 6020B	CSW	1
2626070003	MCM-04	EPA 6020B	CSW	1
2626070004	MCM-08	EPA 6020B	CSW	1
2626070005	DUP-1	EPA 6020B	CSW	1
2626070006	FBL111919	EPA 6020B	CSW	2
2626070007	EQBL111919	EPA 6020B	CSW	2
2626070008	MCM-05	EPA 6020B	CSW	2
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2626070009	MCM-07	EPA 6020B	CSW	3
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2626070010	MCM-14	EPA 6020B	CSW	3
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2626070011	MCM-17	EPA 6020B	CSW	3
		SM 2540C	ALW	1
		EPA 300.0	MWB	3

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: PLANT MCMANUS CCR

Pace Project No.: 2626070

Sample: MCM-01		Lab ID: 2626070001		Collected: 11/20/19 15:12	Received: 11/22/19 08:44	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual	
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Arsenic	<b>0.0064</b>	mg/L	0.0050	0.00035	1	11/27/19 13:08	12/04/19 15:11	7440-38-2		

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## ANALYTICAL RESULTS

Project: PLANT MCMANUS CCR

Pace Project No.: 2626070

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>Sample: MCM-02</b>									
<b>Lab ID: 2626070002</b>									
Collected: 11/19/19 15:48    Received: 11/22/19 08:44    Matrix: Water									
<b>6020B MET ICPMS</b>									
Analytical Method: EPA 6020B    Preparation Method: EPA 3005A									
Arsenic	<b>0.00057J</b>	mg/L	0.0050	0.00035	1	11/27/19 13:08	12/04/19 15:34	7440-38-2	

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## ANALYTICAL RESULTS

Project: PLANT MCMANUS CCR

Pace Project No.: 2626070

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>Sample: MCM-04</b>									
<b>Lab ID: 2626070003</b>									
Collected: 11/20/19 09:24    Received: 11/22/19 08:44    Matrix: Water									
<b>6020B MET ICPMS</b>									
Analytical Method: EPA 6020B    Preparation Method: EPA 3005A									
Cobalt	<b>0.0090</b>	mg/L	0.0025	0.00030	1	11/27/19 13:08	12/04/19 15:40	7440-48-4	

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### ANALYTICAL RESULTS

Project: PLANT MCMANUS CCR

Pace Project No.: 2626070

Sample: MCM-08		Lab ID: 2626070004		Collected: 11/19/19 13:54	Received: 11/22/19 08:44	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual	
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Cobalt	<b>0.0062J</b>	mg/L	0.025	0.0030	10	11/27/19 13:08	12/05/19 16:41	7440-48-4	D3	

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## ANALYTICAL RESULTS

Project: PLANT MCMANUS CCR

Pace Project No.: 2626070

Sample: DUP-1	Lab ID: 2626070005	Collected: 11/19/19 00:00	Received: 11/22/19 08:44	Matrix: Water					
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>									
Analytical Method: EPA 6020B Preparation Method: EPA 3005A									
Cobalt	<b>0.0066J</b>	mg/L	0.025	0.0030	10	11/27/19 13:08	12/05/19 16:47	7440-48-4	D3

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## ANALYTICAL RESULTS

Project: PLANT MCMANUS CCR

Pace Project No.: 2626070

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>Sample: FBL111919      Lab ID: 2626070006      Collected: 11/19/19 16:24      Received: 11/22/19 08:44      Matrix: Water</b>									
<b>6020B MET ICPMS</b> Analytical Method: EPA 6020B      Preparation Method: EPA 3005A									
Arsenic	ND	mg/L	0.0050	0.00035	1	11/27/19 13:08	12/04/19 16:33	7440-38-2	
Cobalt	ND	mg/L	0.0025	0.00030	1	11/27/19 13:08	12/04/19 16:33	7440-48-4	

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## ANALYTICAL RESULTS

Project: PLANT MCMANUS CCR

Pace Project No.: 2626070

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>Sample: EQBL111919      Lab ID: 2626070007      Collected: 11/19/19 16:30      Received: 11/22/19 08:44      Matrix: Water</b>									
<b>6020B MET ICPMS</b> Analytical Method: EPA 6020B      Preparation Method: EPA 3005A									
Arsenic	ND	mg/L	0.0050	0.00035	1	11/27/19 13:08	12/04/19 16:38	7440-38-2	
Cobalt	ND	mg/L	0.0025	0.00030	1	11/27/19 13:08	12/04/19 16:38	7440-48-4	

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: PLANT MCMANUS CCR

Pace Project No.: 2626070

Sample: <b>MCM-05</b>		Lab ID: <b>2626070008</b>		Collected: 11/20/19 11:16		Received: 11/22/19 08:44		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Boron	<b>0.53</b>	mg/L	0.040	0.0049	1	11/27/19 13:08	12/04/19 16:44	7440-42-8	
Calcium	<b>55.8</b>	mg/L	5.0	0.55	50	11/27/19 13:08	12/04/19 16:50	7440-70-2	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>2640</b>	mg/L	10.0	10.0	1		11/25/19 15:12		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>1480</b>	mg/L	100	2.4	100		11/28/19 04:17	16887-00-6	
Fluoride	<b>0.34</b>	mg/L	0.30	0.029	1		11/28/19 05:46	16984-48-8	
Sulfate	<b>132</b>	mg/L	100	1.7	100		11/28/19 04:17	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: PLANT MCMANUS CCR

Pace Project No.: 2626070

Sample: <b>MCM-07</b>		Lab ID: <b>2626070009</b>		Collected: 11/20/19 13:40	Received: 11/22/19 08:44	Matrix: Water			
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Boron	<b>1.3</b>	mg/L	0.20	0.025	5	11/27/19 13:08	12/05/19 15:33	7440-42-8	
Calcium	<b>308</b>	mg/L	5.0	0.55	50	11/27/19 13:08	12/04/19 17:01	7440-70-2	
Lithium	<b>0.12</b>	mg/L	0.050	0.0039	5	11/27/19 13:08	12/05/19 15:33	7439-93-2	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>16700</b>	mg/L	10.0	10.0	1		11/25/19 15:12		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>9810</b>	mg/L	1000	24.0	1000		12/02/19 16:59	16887-00-6	
Fluoride	ND	mg/L	0.30	0.029	1		11/28/19 06:08	16984-48-8	
Sulfate	<b>1550</b>	mg/L	100	1.7	100		11/28/19 04:40	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: PLANT MCMANUS CCR

Pace Project No.: 2626070

Sample: MCM-14		Lab ID: 2626070010		Collected: 11/21/19 08:36		Received: 11/22/19 08:44		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Boron	<b>1.0</b>	mg/L	0.040	0.0049	1	11/27/19 13:08	12/04/19 17:07	7440-42-8	
Calcium	<b>305</b>	mg/L	5.0	0.55	50	11/27/19 13:08	12/04/19 17:13	7440-70-2	
Lithium	<b>0.052</b>	mg/L	0.010	0.00078	1	11/27/19 13:08	12/04/19 17:07	7439-93-2	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>15800</b>	mg/L	10.0	10.0	1		11/25/19 15:12		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>8330</b>	mg/L	500	12.0	500		12/02/19 17:21	16887-00-6	
Fluoride	ND	mg/L	0.30	0.029	1		11/28/19 06:30	16984-48-8	
Sulfate	<b>1070</b>	mg/L	100	1.7	100		11/28/19 05:02	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: PLANT MCMANUS CCR  
Pace Project No.: 2626070

Sample: MCM-17		Lab ID: 2626070011		Collected: 11/21/19 11:36		Received: 11/22/19 08:44		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Arsenic	<b>0.0031J</b>	mg/L	0.0050	0.00035	1	11/27/19 13:08	12/04/19 17:18	7440-38-2	
Boron	<b>1.5</b>	mg/L	0.040	0.0049	1	11/27/19 13:08	12/04/19 17:18	7440-42-8	
Calcium	<b>125</b>	mg/L	5.0	0.55	50	11/27/19 13:08	12/04/19 17:24	7440-70-2	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>7720</b>	mg/L	10.0	10.0	1		11/25/19 15:12		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>3890</b>	mg/L	100	2.4	100		11/28/19 05:24	16887-00-6	
Fluoride	<b>ND</b>	mg/L	0.30	0.029	1		11/28/19 06:52	16984-48-8	
Sulfate	<b>428</b>	mg/L	100	1.7	100		11/28/19 05:24	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: PLANT MCMANUS CCR

Pace Project No.: 2626070

QC Batch: 39683 Analysis Method: EPA 6020B  
 QC Batch Method: EPA 3005A Analysis Description: 6020B MET  
 Associated Lab Samples: 2626070001, 2626070002, 2626070003, 2626070004, 2626070005, 2626070006, 2626070007, 2626070008,  
 2626070009, 2626070010, 2626070011

METHOD BLANK: 180361 Matrix: Water  
 Associated Lab Samples: 2626070001, 2626070002, 2626070003, 2626070004, 2626070005, 2626070006, 2626070007, 2626070008,  
 2626070009, 2626070010, 2626070011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/L	ND	0.0050	0.00035	12/04/19 15:00	
Boron	mg/L	ND	0.040	0.0049	12/04/19 15:00	
Calcium	mg/L	ND	0.10	0.011	12/04/19 15:00	
Cobalt	mg/L	ND	0.0025	0.00030	12/04/19 15:00	
Lithium	mg/L	ND	0.010	0.00078	12/04/19 15:00	

LABORATORY CONTROL SAMPLE: 180362

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.1	0.099	99	80-120	
Boron	mg/L	1	1.0	103	80-120	
Calcium	mg/L	1	1.0	102	80-120	
Cobalt	mg/L	0.1	0.099	99	80-120	
Lithium	mg/L	0.1	0.10	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 180363 180364

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2626070001 Result	Spike Conc.	Spike Conc.	MS Result						
Arsenic	mg/L	0.0064	0.1	0.1	0.11	0.11	103	100	75-125	3	20
Boron	mg/L	0.054	1	1	1.1	1.1	104	102	75-125	1	20
Calcium	mg/L	12.2	1	1	13.3	13.0	106	82	75-125	2	20
Cobalt	mg/L	ND	0.1	0.1	0.11	0.10	105	101	75-125	4	20
Lithium	mg/L	ND	0.1	0.1	0.11	0.10	107	103	75-125	4	20

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### QUALITY CONTROL DATA

Project: PLANT MCMANUS CCR

Pace Project No.: 2626070

QC Batch: 39519 Analysis Method: SM 2540C  
 QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids  
 Associated Lab Samples: 2626070008, 2626070009, 2626070010, 2626070011

LABORATORY CONTROL SAMPLE: 179739

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	399	100	84-108	

SAMPLE DUPLICATE: 179740

Parameter	Units	2626028001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2460	2410	2	10	

SAMPLE DUPLICATE: 179741

Parameter	Units	2626084001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	80.0	88.0	10	10	

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### QUALITY CONTROL DATA

Project: PLANT MCMANUS CCR  
Pace Project No.: 2626070

QC Batch: 39693 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 2626070008, 2626070009, 2626070010, 2626070011

METHOD BLANK: 180385 Matrix: Water  
Associated Lab Samples: 2626070008, 2626070009, 2626070010, 2626070011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.024	11/27/19 17:15	
Fluoride	mg/L	ND	0.30	0.029	11/27/19 17:15	
Sulfate	mg/L	ND	1.0	0.017	11/27/19 17:15	

LABORATORY CONTROL SAMPLE: 180386

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.5	90	90-110	
Fluoride	mg/L	5	4.6	92	90-110	
Sulfate	mg/L	10	10.6	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 180387 180388

Parameter	Units	2625876001		2625876002		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	% Rec	% Rec					
Chloride	mg/L	6.6	10	10	15.8	15.7	92	92	90-110	0	15		
Fluoride	mg/L	ND	10	10	9.4	9.3	93	92	90-110	1	15		
Sulfate	mg/L	ND	10	10	14.4	14.2	96	94	90-110	1	15		

MATRIX SPIKE SAMPLE: 180389

Parameter	Units	2625876002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	7.7	10	15.3	76	90-110	M1
Fluoride	mg/L	ND	10	9.0	89	90-110	M1
Sulfate	mg/L	6.9	10	17.8	109	90-110	

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## QUALIFIERS

Project: PLANT MCMANUS CCR

Pace Project No.: 2626070

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### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

### ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

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

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PLANT MCMANUS CCR

Pace Project No.: 2626070

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2626070001	MCM-01	EPA 3005A	39683	EPA 6020B	39702
2626070002	MCM-02	EPA 3005A	39683	EPA 6020B	39702
2626070003	MCM-04	EPA 3005A	39683	EPA 6020B	39702
2626070004	MCM-08	EPA 3005A	39683	EPA 6020B	39702
2626070005	DUP-1	EPA 3005A	39683	EPA 6020B	39702
2626070006	FBL111919	EPA 3005A	39683	EPA 6020B	39702
2626070007	EQBL111919	EPA 3005A	39683	EPA 6020B	39702
2626070008	MCM-05	EPA 3005A	39683	EPA 6020B	39702
2626070009	MCM-07	EPA 3005A	39683	EPA 6020B	39702
2626070010	MCM-14	EPA 3005A	39683	EPA 6020B	39702
2626070011	MCM-17	EPA 3005A	39683	EPA 6020B	39702
2626070008	MCM-05	SM 2540C	39519		
2626070009	MCM-07	SM 2540C	39519		
2626070010	MCM-14	SM 2540C	39519		
2626070011	MCM-17	SM 2540C	39519		
2626070008	MCM-05	EPA 300.0	39693		
2626070009	MCM-07	EPA 300.0	39693		
2626070010	MCM-14	EPA 300.0	39693		
2626070011	MCM-17	EPA 300.0	39693		

### REPORT OF LABORATORY ANALYSIS

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Client Name

WO#: 2626070

Project #

Courier:  Fed Ex  UPS  USPS

PM: KH

Due Date: 12/03/19

Tracking #: 7782 138E

CLIENT: GAPower-CCR

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

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used TH2083

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

Cooler Temperature Temp should be above freezing to 6°C

Biological Tissue is Frozen: Yes No

Date and initials of person examining contents:

Comments:

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

Client Notification/ Resolution:

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Field Data Required? Y / N

Comments/ Resolution: \_\_\_\_\_

3000 W28

Project Manager Review:

Date: \_\_\_\_\_

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

January 08, 2020

Mr. Joju Abraham  
Georgia Power  
2480 Maner Road  
Atlanta, GA 30339

RE: Project: 2626065  
Pace Project No.: 30342892

Dear Mr. Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on November 26, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Jacquelyn Collins  
jacquelyn.collins@pacelabs.com  
(724)850-5612  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: 2626065  
Pace Project No.: 30342892

### **Pace Analytical Services Pennsylvania**

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

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

## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 2626065  
Pace Project No.: 30342892

<b>Lab ID</b>	<b>Sample ID</b>	<b>Matrix</b>	<b>Date Collected</b>	<b>Date Received</b>
2626065005	MCM-07	Water	11/20/19 13:40	11/26/19 09:30
2626065007	MCM-14	Water	11/21/19 08:36	11/26/19 09:30
2626065008	MCM-17	Water	11/21/19 11:36	11/26/19 09:30

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 2626065  
Pace Project No.: 30342892

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2626065005	MCM-07	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2626065007	MCM-14	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2626065008	MCM-17	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2626065  
Pace Project No.: 30342892

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 9315	<b>4.02 ± 1.08 (0.572)</b> C:56% T:NA	pCi/L	01/03/20 08:20	13982-63-3	
Radium-228		EPA 9320	<b>5.78 ± 1.30 (0.889)</b> C:77% T:73%	pCi/L	01/06/20 11:50	15262-20-1	
Total Radium		Total Radium Calculation	<b>9.80 ± 2.38 (1.46)</b>	pCi/L	01/07/20 09:41	7440-14-4	

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 9315	<b>3.21 ± 0.781 (0.386)</b> C:96% T:NA	pCi/L	01/03/20 08:12	13982-63-3	
Radium-228		EPA 9320	<b>4.13 ± 0.973 (0.813)</b> C:74% T:94%	pCi/L	01/06/20 11:50	15262-20-1	
Total Radium		Total Radium Calculation	<b>7.34 ± 1.75 (1.20)</b>	pCi/L	01/07/20 09:41	7440-14-4	

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 9315	<b>5.08 ± 1.10 (0.360)</b> C:96% T:NA	pCi/L	01/03/20 08:20	13982-63-3	
Radium-228		EPA 9320	<b>3.81 ± 0.962 (0.898)</b> C:72% T:78%	pCi/L	01/06/20 11:50	15262-20-1	
Total Radium		Total Radium Calculation	<b>8.89 ± 2.06 (1.26)</b>	pCi/L	01/07/20 09:41	7440-14-4	

**Sample: MCM-17**      **Lab ID: 2626065008**      Collected: 11/21/19 11:36      Received: 11/26/19 09:30      Matrix: Water  
PWS:      Site ID:      Sample Type:

Comments: • Upon receipt at the laboratory, 2.5 mls of nitric acid was added to one container to meet the sample preservation requirement of pH <2 for radiological analyses. The sample was preserved <2 within the required 5 days of collection.

### REPORT OF LABORATORY ANALYSIS

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**QUALITY CONTROL - RADIOCHEMISTRY**

Project: 2626065  
Pace Project No.: 30342892

---

QC Batch: 377631 Analysis Method: EPA 9315  
QC Batch Method: EPA 9315 Analysis Description: 9315 Total Radium  
Associated Lab Samples: 2626065005, 2626065007, 2626065008

---

METHOD BLANK: 1831482 Matrix: Water  
Associated Lab Samples: 2626065005, 2626065007, 2626065008

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.397 ± 0.277 (0.443) C:99% T:NA	pCi/L	01/03/20 08:04	

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

**REPORT OF LABORATORY ANALYSIS**

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## QUALIFIERS

Project: 2626065  
Pace Project No.: 30342892

### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

### LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

## REPORT OF LABORATORY ANALYSIS

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Pittsburgh Lab Sample Condition Upon Receipt



Client Name: Pace, Georgia Charlotte

Project # #-30342892

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Other DM 11-31-19

Label BLM  
LIMS Login BLM

Tracking #: 106993092605

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

Thermometer Used NA Type of Ice: Wet Blue None

Cooler Temperature Observed Temp NA °C Correction Factor: NA °C Final Temp: NA °C  
Temp should be above freezing to 6°C

Comments:	pH paper Lot#			Date and Initials of person examining contents: <u>BA 11-26-19</u>
	Yes	No	N/A	
Chain of Custody Present:	<input checked="" type="checkbox"/>			1. <u>10D0391</u>
Chain of Custody Filled Out:	<input checked="" type="checkbox"/>			2.
Chain of Custody Relinquished:		<input checked="" type="checkbox"/>		3.
Sampler Name & Signature on COC:		<input checked="" type="checkbox"/>		4.
Sample Labels match COC: -Includes date/time/ID Matrix: <u>WT</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<u>BA 11-26-19</u>	5.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/>			6.
Short Hold Time Analysis (<72hr remaining):		<input checked="" type="checkbox"/>		7.
Rush Turn Around Time Requested:		<input checked="" type="checkbox"/>		8.
Sufficient Volume:	<input checked="" type="checkbox"/>			9.
Correct Containers Used: -Pace Containers Used:	<input checked="" type="checkbox"/>			10.
Containers Intact:	<input checked="" type="checkbox"/>			11.
Orthophosphate field filtered			<input checked="" type="checkbox"/>	12.
Hex Cr Aqueous sample field filtered			<input checked="" type="checkbox"/>	13.
Organic Samples checked for dechlorination:			<input checked="" type="checkbox"/>	14.
Filtered volume received for Dissolved tests			<input checked="" type="checkbox"/>	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	<input checked="" type="checkbox"/>			16. <u>Added 25 ml to sample 2626065008 1x ONLY</u> <u>Added to one bottle.</u>
All containers meet method preservation requirements.	<input checked="" type="checkbox"/>			Initial when completed: <u>BA</u> Date/time of preservation: <u>11-26-19 1609</u> Lot # of added preservative: <u>DL19-1322</u>
Headspace in VOA Vials (>6mm):			<input checked="" type="checkbox"/>	17.
Trip Blank Present:			<input checked="" type="checkbox"/>	18.
Trip Blank Custody Seals Present			<input checked="" type="checkbox"/>	
Rad Samples Screened < 0.5 mrem/hr	<input checked="" type="checkbox"/>			Initial when completed: <u>BA</u> Date: <u>11-26-19</u>

Client Notification/ Resolution:

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Contacted By: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)  
\*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

# Quality Control Sample Performance Assessment



Test: Ra-226  
Analyst: LAL  
Date: 1/2/2020  
Worklist: 51690  
Matrix: DW

**Analyst Must Manually Enter All Fields Highlighted in Yellow.**

Method Blank Assessment	
MB Sample ID	1831482
MB concentration:	0.397
M/B Counting Uncertainty:	0.271
MB MDC:	0.443
MB Numerical Performance Indicator:	2.87
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment		LCSD (Y or N)?	Y
Count Date:	1/3/2020	LCSD51690	1/3/2020
Spike I.D.:	19-033		19-033
Decay Corrected Spike Concentration (pCi/mL):	24.052		24.052
Volume Used (mL):	0.10		0.10
Aliquot Volume (L, g, F):	0.504		0.506
Target Conc. (pCi/L, g, F):	4.776		4.754
Uncertainty (Calculated):	0.057		0.057
Result (pCi/L, g, F):	4.574		4.999
LCSD Counting Uncertainty (pCi/L, g, F):	0.792		0.812
Numerical Performance Indicator:	-0.50		0.59
Percent Recovery:	95.77%		105.14%
Status vs Numerical Indicator:	N/A		N/A
Upper % Recovery Limits:	Pass		Pass
Lower % Recovery Limits:	125%		125%
	75%		75%

Duplicate Sample Assessment	
Sample I.D.:	LCSD51690
Duplicate Sample I.D.:	LCSD31690
Sample Result (pCi/L, g, F):	4.574
Sample Duplicate Result (pCi/L, g, F):	0.792
Sample Duplicate Result (pCi/L, g, F):	4.999
Are sample and/or duplicate results below RL?	NO
Duplicate Numerical Performance Indicator:	-0.734
(Based on the LCSD/LCSD Percent Recoveries) Duplicate RPD:	9.32%
Duplicate Status vs Numerical Indicator:	N/A
Duplicate Status vs RPD:	Pass
% RPD Limit:	25%

## Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date: Sample I.D. Sample MS I.D. Sample MSD I.D. Spike I.D.: MS/MSD Decay Corrected Concentration (pCi/mL): Spike Volume Used in MS (mL): Spike Volume Used in MSD (mL): MS Aliquot (L, g, F): MSD Aliquot (L, g, F): MS Target Conc. (pCi/L, g, F): MSD Target Conc. (pCi/L, g, F): MS Spike Uncertainty (calculated): MSD Spike Uncertainty (calculated): Sample Result: Sample Result Counting Uncertainty (pCi/L, g, F): Sample Matrix Spike Result: Matrix Spike Result Counting Uncertainty (pCi/L, g, F): Sample Matrix Spike Duplicate Result: Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F): MS Numerical Performance Indicator: MSD Numerical Performance Indicator: MS Percent Recovery: MSD Percent Recovery: MS Status vs Numerical Indicator: MSD Status vs Numerical Indicator: MS Status vs Recovery: MSD Status vs Recovery: MS/MSD Upper % Recovery Limits: MS/MSD Lower % Recovery Limits:		

Matrix Spike/Matrix Spike Duplicate Sample Assessment
Sample I.D. Sample MS I.D. Sample MSD I.D. Sample Matrix Spike Result: Matrix Spike Result Counting Uncertainty (pCi/L, g, F): Sample Matrix Spike Duplicate Result: Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F): Duplicate Numerical Performance Indicator: (Based on the Percent Recoveries) MS/MSD Duplicate RPD: MS/MSD Duplicate Status vs Numerical Indicator: MS/MSD Duplicate Status vs RPD: % RPD Limit:

Am 1/3/20



# Quality Control Sample Performance Assessment



Analyst Must Manually Enter All Fields Highlighted in Yellow.

Test: Ra-228  
Analyst: VAL  
Date: 1/3/2020  
Worklist: 51686  
Matrix: WT

Method Blank Assessment	
MB Sample ID	1831430
MB concentration:	0.390
M/B 2 Sigma CSU:	0.409
MB MDC:	0.850
MB Numerical Performance Indicator:	1.87
MB Status vs Numerical Indicator:	Pass
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	
	LCSS1686	Y
Count Date:	1/6/2020	1/6/2020
Spike I.D.:	19-057	19-057
Decay Corrected Spike Concentration (pCi/mL):	35.639	35.639
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.802	0.812
Target Conc. (pCi/L, g, F):	4.443	4.390
Uncertainty (calculated):	0.320	0.316
Result (pCi/L, g, F):	5.033	3.994
LCSD/LCSD 2 Sigma CSU (pCi/L, g, F):	1.148	0.936
Numerical Performance Indicator:	0.97	-0.79
Percent Recovery:	113.27%	90.97%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date: Sample I.D. Sample MS I.D. Sample MSD I.D. Spike I.D.: MS/MSD Decay Corrected Spike Concentration (pCi/mL): Spike Volume Used in MS (mL): Spike Volume Used in MSD (mL): MS Aliquot (L, g, F): MS Target Conc. (pCi/L, g, F): MSD Aliquot (L, g, F): MSD Target Conc. (pCi/L, g, F): MS Spike Uncertainty (calculated): MS Spike Uncertainty (calculated): MS Numerical Performance Indicator: MS Percent Recovery: MS Status vs Numerical Indicator: MS Status vs Recovery: MS/MSD Upper % Recovery Limits: MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Sample I.D.: Duplicate Sample I.D.: Sample Result (pCi/L, g, F): Sample Duplicate Result (pCi/L, g, F): Sample Result 2 Sigma CSU (pCi/L, g, F): Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F): Are sample and/or duplicate results below RL? Duplicate Numerical Performance Indicator: Duplicate (Percent Recoveries) Duplicate RPD: Duplicate Status vs Numerical Indicator: Duplicate Status vs RPD: % RPD Limit:	LCS51686 LCSD51686 5.033 1.148 3.994 0.936 NO 1.375 21.83% Pass Pass 36%

Matrix Spike/Matrix Spike Duplicate Sample Assessment
Sample I.D. Sample MS I.D. Sample MSD I.D. Matrix Spike Result 2 Sigma CSU (pCi/L, g, F): Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F): Duplicate Numerical Performance Indicator: Duplicate (Percent Recoveries) MS/MSD Duplicate RPD: MS/MSD Duplicate Status vs Numerical Indicator: MS/MSD Duplicate Status vs RPD: % RPD Limit:

## Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

JS 1-7-20  
MS 1-7-20

December 17, 2019

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

RE: Project: Georgia Power - Plant McManus  
Pace Project No.: 2625466

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on November 08, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



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

Enclosures

cc: Lea Millet, Resolute Environmental & Water Resources  
Lauren Petty, Southern Company Services, Inc.  
Kevin Stephenson, Resolute Environmental & Water  
Resources Consulting, LLC  
Rebecca Thornton, Pace Analytical Atlanta  
Stephen Wilson, Resolute Environmental & Water  
Resources Consulting, LLC



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: Georgia Power - Plant McManus

Pace Project No.: 2625466

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### **Pace Analytical Services Atlanta**

110 Technology Parkway Peachtree Corners, GA 30092

Florida DOH Certification #: E87315

Georgia DW Inorganics Certification #: 812

Georgia DW Microbiology Certification #: 812

North Carolina Certification #: 381

South Carolina Certification #: 98011001

Virginia Certification #: 460204

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## SAMPLE SUMMARY

Project: Georgia Power - Plant McManus

Pace Project No.: 2625466

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2625466001	MCM-19	Water	11/07/19 08:56	11/08/19 10:10
2625466002	MCM-20	Water	11/07/19 11:00	11/08/19 10:10
2625466003	MCM-18	Water	11/07/19 13:30	11/08/19 10:10
2625466004	FBL110719	Water	11/07/19 13:58	11/08/19 10:10
2625466005	EQBL110719	Water	11/07/19 14:04	11/08/19 10:10
2625466006	DUP-1	Water	11/07/19 00:00	11/08/19 10:10

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### SAMPLE ANALYTE COUNT

Project: Georgia Power - Plant McManus  
Pace Project No.: 2625466

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2625466001	MCM-19	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2625466002	MCM-20	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2625466003	MCM-18	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2625466004	FBL110719	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2625466005	EQBL110719	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2625466006	DUP-1	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	ALW	1
		EPA 300.0	MWB	3

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## ANALYTICAL RESULTS

Project: Georgia Power - Plant McManus  
Pace Project No.: 2625466

Sample: MCM-19		Lab ID: 2625466001		Collected: 11/07/19 08:56		Received: 11/08/19 10:10		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	11/12/19 14:24	11/13/19 21:52	7440-36-0		
Arsenic	<b>0.0094J</b>	mg/L	0.025	0.0018	5	11/12/19 14:24	11/14/19 14:31	7440-38-2	D3	
Barium	<b>0.22</b>	mg/L	0.010	0.00049	1	11/12/19 14:24	11/13/19 21:52	7440-39-3		
Beryllium	<b>0.0068J</b>	mg/L	0.015	0.00037	5	11/12/19 14:24	11/14/19 14:31	7440-41-7	D3	
Boron	<b>0.84</b>	mg/L	0.20	0.025	5	11/12/19 14:24	11/14/19 14:31	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	11/12/19 14:24	11/13/19 21:52	7440-43-9		
Calcium	<b>158</b>	mg/L	5.0	0.55	50	11/12/19 14:24	11/13/19 21:58	7440-70-2		
Chromium	<b>0.0050J</b>	mg/L	0.050	0.0020	5	11/12/19 14:24	11/14/19 14:31	7440-47-3	D3	
Cobalt	ND	mg/L	0.025	0.0015	5	11/12/19 14:24	11/14/19 14:31	7440-48-4	D3	
Lead	<b>0.00063J</b>	mg/L	0.0050	0.000046	1	11/12/19 14:24	11/13/19 21:52	7439-92-1		
Lithium	<b>0.015J</b>	mg/L	0.15	0.0039	5	11/12/19 14:24	11/14/19 14:31	7439-93-2	D3	
Molybdenum	ND	mg/L	0.010	0.00095	1	11/12/19 14:24	11/13/19 21:52	7439-98-7		
Selenium	<b>0.063</b>	mg/L	0.050	0.0063	5	11/12/19 14:24	11/14/19 14:31	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	11/12/19 14:24	11/13/19 21:52	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	11/12/19 13:45	11/13/19 12:19	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>10900</b>	mg/L	10.0	10.0	1		11/12/19 17:12			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>6170</b>	mg/L	1000	24.0	1000		11/13/19 19:47	16887-00-6	M1	
Fluoride	ND	mg/L	0.30	0.029	1		11/13/19 09:06	16984-48-8	M1	
Sulfate	<b>832</b>	mg/L	100	1.7	100		11/13/19 16:06	14808-79-8	M1	

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## ANALYTICAL RESULTS

Project: Georgia Power - Plant McManus  
Pace Project No.: 2625466

Sample: <b>MCM-20</b>		Lab ID: <b>2625466002</b>		Collected: 11/07/19 11:00		Received: 11/08/19 10:10		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	11/12/19 14:24	11/13/19 22:04	7440-36-0		
Arsenic	<b>0.026</b>	mg/L	0.025	0.0018	5	11/12/19 14:24	11/14/19 14:37	7440-38-2		
Barium	<b>0.16</b>	mg/L	0.010	0.00049	1	11/12/19 14:24	11/13/19 22:04	7440-39-3		
Beryllium	<b>0.021</b>	mg/L	0.015	0.00037	5	11/12/19 14:24	11/14/19 14:37	7440-41-7		
Boron	<b>1.1</b>	mg/L	0.20	0.025	5	11/12/19 14:24	11/14/19 14:37	7440-42-8		
Cadmium	<b>0.00034J</b>	mg/L	0.0025	0.00011	1	11/12/19 14:24	11/13/19 22:04	7440-43-9		
Calcium	<b>163</b>	mg/L	5.0	0.55	50	11/12/19 14:24	11/13/19 22:09	7440-70-2		
Chromium	<b>0.0083J</b>	mg/L	0.010	0.00039	1	11/12/19 14:24	11/13/19 22:04	7440-47-3		
Cobalt	<b>0.026</b>	mg/L	0.0050	0.00030	1	11/12/19 14:24	11/13/19 22:04	7440-48-4		
Lead	<b>0.0019J</b>	mg/L	0.0050	0.000046	1	11/12/19 14:24	11/13/19 22:04	7439-92-1		
Lithium	<b>0.026J</b>	mg/L	0.15	0.0039	5	11/12/19 14:24	11/14/19 14:37	7439-93-2	D3	
Molybdenum	ND	mg/L	0.010	0.00095	1	11/12/19 14:24	11/13/19 22:04	7439-98-7		
Selenium	<b>0.12</b>	mg/L	0.050	0.0063	5	11/12/19 14:24	11/14/19 14:37	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	11/12/19 14:24	11/13/19 22:04	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	11/12/19 13:45	11/13/19 12:22	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>13500</b>	mg/L	10.0	10.0	1		11/12/19 17:12			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>7880</b>	mg/L	1000	24.0	1000		11/13/19 20:09	16887-00-6		
Fluoride	<b>1.4</b>	mg/L	0.30	0.029	1		11/13/19 10:12	16984-48-8		
Sulfate	<b>1010</b>	mg/L	100	1.7	100		11/13/19 16:28	14808-79-8		

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## ANALYTICAL RESULTS

Project: Georgia Power - Plant McManus  
Pace Project No.: 2625466

Sample: MCM-18		Lab ID: 2625466003		Collected: 11/07/19 13:30		Received: 11/08/19 10:10		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	11/12/19 14:24	11/13/19 22:15	7440-36-0		
Arsenic	<b>0.0067</b>	mg/L	0.0050	0.00035	1	11/12/19 14:24	11/13/19 22:15	7440-38-2		
Barium	<b>0.12</b>	mg/L	0.010	0.00049	1	11/12/19 14:24	11/13/19 22:15	7440-39-3		
Beryllium	<b>0.0070</b>	mg/L	0.0030	0.000074	1	11/12/19 14:24	11/13/19 22:15	7440-41-7		
Boron	<b>0.27</b>	mg/L	0.040	0.0049	1	11/12/19 14:24	11/13/19 22:15	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	11/12/19 14:24	11/13/19 22:15	7440-43-9		
Calcium	<b>46.2</b>	mg/L	5.0	0.55	50	11/12/19 14:24	11/13/19 22:21	7440-70-2		
Chromium	<b>0.0038J</b>	mg/L	0.010	0.00039	1	11/12/19 14:24	11/13/19 22:15	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	11/12/19 14:24	11/13/19 22:15	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	11/12/19 14:24	11/13/19 22:15	7439-92-1		
Lithium	<b>0.0055J</b>	mg/L	0.030	0.00078	1	11/12/19 14:24	11/13/19 22:15	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	11/12/19 14:24	11/13/19 22:15	7439-98-7		
Selenium	<b>0.036</b>	mg/L	0.010	0.0013	1	11/12/19 14:24	11/13/19 22:15	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	11/12/19 14:24	11/13/19 22:15	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	11/12/19 13:45	11/13/19 12:36	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>4140</b>	mg/L	10.0	10.0	1		11/12/19 17:12			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>2360</b>	mg/L	100	2.4	100		11/13/19 16:50	16887-00-6		
Fluoride	<b>0.49</b>	mg/L	0.30	0.029	1		11/13/19 10:34	16984-48-8	B	
Sulfate	<b>379</b>	mg/L	100	1.7	100		11/13/19 16:50	14808-79-8		

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### ANALYTICAL RESULTS

Project: Georgia Power - Plant McManus  
Pace Project No.: 2625466

Sample: <b>FBL110719</b>		Lab ID: <b>2625466004</b>		Collected: 11/07/19 13:58		Received: 11/08/19 10:10		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	11/12/19 14:24	11/13/19 22:27	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	11/12/19 14:24	11/13/19 22:27	7440-38-2	
Barium	ND	mg/L	0.010	0.00049	1	11/12/19 14:24	11/13/19 22:27	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	11/12/19 14:24	11/13/19 22:27	7440-41-7	
Boron	ND	mg/L	0.040	0.0049	1	11/12/19 14:24	11/13/19 22:27	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	11/12/19 14:24	11/13/19 22:27	7440-43-9	
Calcium	<b>0.013J</b>	mg/L	0.10	0.011	1	11/12/19 14:24	11/13/19 22:27	7440-70-2	
Chromium	ND	mg/L	0.010	0.00039	1	11/12/19 14:24	11/13/19 22:27	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	11/12/19 14:24	11/13/19 22:27	7440-48-4	
Lead	<b>0.000048J</b>	mg/L	0.0050	0.000046	1	11/12/19 14:24	11/13/19 22:27	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	11/12/19 14:24	11/13/19 22:27	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	11/12/19 14:24	11/13/19 22:27	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	11/12/19 14:24	11/13/19 22:27	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	11/12/19 14:24	11/13/19 22:27	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	11/12/19 13:45	11/13/19 12:38	7439-97-6	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	ND	mg/L	10.0	10.0	1		11/12/19 17:12		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>1.5</b>	mg/L	1.0	0.024	1		11/13/19 10:56	16887-00-6	
Fluoride	<b>0.038J</b>	mg/L	0.30	0.029	1		11/13/19 10:56	16984-48-8	B
Sulfate	<b>2.0</b>	mg/L	1.0	0.017	1		11/13/19 10:56	14808-79-8	

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### ANALYTICAL RESULTS

Project: Georgia Power - Plant McManus  
Pace Project No.: 2625466

Sample: EQBL110719		Lab ID: 2625466005		Collected: 11/07/19 14:04		Received: 11/08/19 10:10		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	11/12/19 14:24	11/13/19 22:44	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00035	1	11/12/19 14:24	11/13/19 22:44	7440-38-2		
Barium	ND	mg/L	0.010	0.00049	1	11/12/19 14:24	11/13/19 22:44	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	11/12/19 14:24	11/13/19 22:44	7440-41-7		
Boron	ND	mg/L	0.040	0.0049	1	11/12/19 14:24	11/13/19 22:44	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	11/12/19 14:24	11/13/19 22:44	7440-43-9		
Calcium	<b>0.022J</b>	mg/L	0.10	0.011	1	11/12/19 14:24	11/13/19 22:44	7440-70-2		
Chromium	ND	mg/L	0.010	0.00039	1	11/12/19 14:24	11/13/19 22:44	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	11/12/19 14:24	11/13/19 22:44	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	11/12/19 14:24	11/13/19 22:44	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	11/12/19 14:24	11/13/19 22:44	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	11/12/19 14:24	11/13/19 22:44	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	11/12/19 14:24	11/13/19 22:44	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	11/12/19 14:24	11/13/19 22:44	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	11/12/19 13:45	11/13/19 12:41	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	ND	mg/L	10.0	10.0	1		11/12/19 17:12			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>0.37J</b>	mg/L	1.0	0.024	1		11/13/19 11:18	16887-00-6		
Fluoride	ND	mg/L	0.30	0.029	1		11/13/19 11:18	16984-48-8		
Sulfate	<b>0.039J</b>	mg/L	1.0	0.017	1		11/13/19 11:18	14808-79-8		

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### ANALYTICAL RESULTS

Project: Georgia Power - Plant McManus  
Pace Project No.: 2625466

Sample: DUP-1		Lab ID: 2625466006		Collected: 11/07/19 00:00		Received: 11/08/19 10:10		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	11/12/19 14:24	11/13/19 22:50	7440-36-0		
Arsenic	<b>0.010</b>	mg/L	0.0050	0.00035	1	11/12/19 14:24	11/13/19 22:50	7440-38-2		
Barium	<b>0.20</b>	mg/L	0.010	0.00049	1	11/12/19 14:24	11/13/19 22:50	7440-39-3		
Beryllium	<b>0.0068J</b>	mg/L	0.015	0.00037	5	11/12/19 14:24	11/14/19 14:42	7440-41-7	D3	
Boron	<b>0.29</b>	mg/L	0.20	0.025	5	11/12/19 14:24	11/14/19 14:42	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	11/12/19 14:24	11/13/19 22:50	7440-43-9		
Calcium	<b>40.0</b>	mg/L	0.50	0.055	5	11/12/19 14:24	11/14/19 14:42	7440-70-2		
Chromium	<b>0.0049J</b>	mg/L	0.010	0.00039	1	11/12/19 14:24	11/13/19 22:50	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	11/12/19 14:24	11/13/19 22:50	7440-48-4		
Lead	<b>0.00012J</b>	mg/L	0.0050	0.000046	1	11/12/19 14:24	11/13/19 22:50	7439-92-1		
Lithium	<b>0.0053J</b>	mg/L	0.15	0.0039	5	11/12/19 14:24	11/14/19 14:42	7439-93-2	D3	
Molybdenum	ND	mg/L	0.010	0.00095	1	11/12/19 14:24	11/13/19 22:50	7439-98-7		
Selenium	<b>0.075</b>	mg/L	0.010	0.0013	1	11/12/19 14:24	11/13/19 22:50	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	11/12/19 14:24	11/13/19 22:50	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	11/12/19 13:45	11/13/19 12:43	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>11100</b>	mg/L	10.0	10.0	1		11/12/19 17:13			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>6430</b>	mg/L	1000	24.0	1000		11/13/19 20:54	16887-00-6		
Fluoride	ND	mg/L	0.30	0.029	1		11/13/19 11:40	16984-48-8		
Sulfate	<b>814</b>	mg/L	100	1.7	100		11/13/19 17:12	14808-79-8		

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Georgia Power - Plant McManus  
Pace Project No.: 2625466

QC Batch: 38630 Analysis Method: EPA 7470A  
QC Batch Method: EPA 7470A Analysis Description: 7470 Mercury  
Associated Lab Samples: 2625466001, 2625466002, 2625466003, 2625466004, 2625466005, 2625466006

METHOD BLANK: 175574 Matrix: Water  
Associated Lab Samples: 2625466001, 2625466002, 2625466003, 2625466004, 2625466005, 2625466006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	11/13/19 12:07	

LABORATORY CONTROL SAMPLE: 175575

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0027	107	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 175576 175577

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		2625466002 Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Mercury	mg/L	ND	0.0025	0.0025	0.0028	0.0027	112	109	75-125	3	20		

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### QUALITY CONTROL DATA

Project: Georgia Power - Plant McManus  
Pace Project No.: 2625466

QC Batch: 38622 Analysis Method: EPA 6020B  
QC Batch Method: EPA 3005A Analysis Description: 6020B MET  
Associated Lab Samples: 2625466001, 2625466002, 2625466003, 2625466004, 2625466005, 2625466006

METHOD BLANK: 175522 Matrix: Water  
Associated Lab Samples: 2625466001, 2625466002, 2625466003, 2625466004, 2625466005, 2625466006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	11/13/19 20:26	
Arsenic	mg/L	0.00048J	0.0050	0.00035	11/13/19 20:26	
Barium	mg/L	ND	0.010	0.00049	11/13/19 20:26	
Beryllium	mg/L	ND	0.0030	0.000074	11/13/19 20:26	
Boron	mg/L	ND	0.040	0.0049	11/13/19 20:26	
Cadmium	mg/L	ND	0.0025	0.00011	11/13/19 20:26	
Calcium	mg/L	ND	0.10	0.011	11/13/19 20:26	
Chromium	mg/L	ND	0.010	0.00039	11/13/19 20:26	
Cobalt	mg/L	ND	0.0050	0.00030	11/13/19 20:26	
Lead	mg/L	ND	0.0050	0.000046	11/13/19 20:26	
Lithium	mg/L	ND	0.030	0.00078	11/13/19 20:26	
Molybdenum	mg/L	ND	0.010	0.00095	11/13/19 20:26	
Selenium	mg/L	ND	0.010	0.0013	11/13/19 20:26	
Thallium	mg/L	ND	0.0010	0.000052	11/13/19 20:26	

LABORATORY CONTROL SAMPLE: 175523

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.11	110	80-120	
Arsenic	mg/L	0.1	0.098	98	80-120	
Barium	mg/L	0.1	0.11	105	80-120	
Beryllium	mg/L	0.1	0.10	104	80-120	
Boron	mg/L	1	1.0	104	80-120	
Cadmium	mg/L	0.1	0.10	101	80-120	
Calcium	mg/L	1	1.0	101	80-120	
Chromium	mg/L	0.1	0.10	103	80-120	
Cobalt	mg/L	0.1	0.10	102	80-120	
Lead	mg/L	0.1	0.10	105	80-120	
Lithium	mg/L	0.1	0.10	103	80-120	
Molybdenum	mg/L	0.1	0.11	109	80-120	
Selenium	mg/L	0.1	0.093	93	80-120	
Thallium	mg/L	0.1	0.10	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 175524 175525

Parameter	Units	2625374003 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
			Spike Conc.	Spike Conc.							
Antimony	mg/L	ND	0.1	0.1	0.10	0.11	104	105	75-125	1	20

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### QUALITY CONTROL DATA

Project: Georgia Power - Plant McManus  
Pace Project No.: 2625466

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 175524		175525		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2625374003 Result	MS Spike Conc.	MSD Spike Conc.									
Arsenic	mg/L	0.011	0.1	0.1	0.11	0.11	98	97	75-125	1	20		
Barium	mg/L	0.078	0.1	0.1	0.18	0.18	105	102	75-125	2	20		
Beryllium	mg/L	0.000079J	0.1	0.1	0.099	0.10	99	100	75-125	2	20		
Boron	mg/L	0.048	1	1	1.0	1.0	100	100	75-125	0	20		
Cadmium	mg/L	ND	0.1	0.1	0.10	0.10	101	101	75-125	1	20		
Calcium	mg/L	28.2	1	1	29.1	28.6	98	47	75-125	2	20	M6	
Chromium	mg/L	ND	0.1	0.1	0.10	0.10	100	100	75-125	0	20		
Cobalt	mg/L	0.014	0.1	0.1	0.11	0.11	99	97	75-125	2	20		
Lead	mg/L	0.00011J	0.1	0.1	0.10	0.096	99	96	75-125	4	20		
Lithium	mg/L	0.033	0.1	0.1	0.14	0.13	103	99	75-125	3	20		
Molybdenum	mg/L	ND	0.1	0.1	0.099	0.099	99	99	75-125	0	20		
Selenium	mg/L	ND	0.1	0.1	0.096	0.096	96	96	75-125	1	20		
Thallium	mg/L	ND	0.1	0.1	0.098	0.096	98	96	75-125	2	20		

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### QUALITY CONTROL DATA

Project: Georgia Power - Plant McManus  
Pace Project No.: 2625466

QC Batch: 38694 Analysis Method: SM 2540C  
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids  
Associated Lab Samples: 2625466001, 2625466002, 2625466003, 2625466004, 2625466005, 2625466006

LABORATORY CONTROL SAMPLE: 175768

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	393	98	84-108	

SAMPLE DUPLICATE: 175769

Parameter	Units	2625494001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	85.0	82.0	4	10	

SAMPLE DUPLICATE: 175770

Parameter	Units	2625494011 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	90.0	99.0	10	10	

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### QUALITY CONTROL DATA

Project: Georgia Power - Plant McManus  
Pace Project No.: 2625466

QC Batch: 38709 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 2625466001, 2625466002, 2625466003, 2625466004, 2625466005, 2625466006

METHOD BLANK: 175821 Matrix: Water  
Associated Lab Samples: 2625466001, 2625466002, 2625466003, 2625466004, 2625466005, 2625466006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.024	11/13/19 08:22	
Fluoride	mg/L	0.098J	0.30	0.029	11/13/19 08:22	
Sulfate	mg/L	ND	1.0	0.017	11/13/19 08:22	

LABORATORY CONTROL SAMPLE: 175822

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	10	9.9	99	90-110	
Fluoride	mg/L	10	9.9	99	90-110	
Sulfate	mg/L	10	9.5	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 175823 175824

Parameter	Units	2625466001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	ND	10	10	0.72	0.68	7	7	90-110	6	15	M1

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## QUALIFIERS

Project: Georgia Power - Plant McManus

Pace Project No.: 2625466

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### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

### ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

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

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

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Georgia Power - Plant McManus

Pace Project No.: 2625466

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2625466001	MCM-19	EPA 3005A	38622	EPA 6020B	38720
2625466002	MCM-20	EPA 3005A	38622	EPA 6020B	38720
2625466003	MCM-18	EPA 3005A	38622	EPA 6020B	38720
2625466004	FBL110719	EPA 3005A	38622	EPA 6020B	38720
2625466005	EQBL110719	EPA 3005A	38622	EPA 6020B	38720
2625466006	DUP-1	EPA 3005A	38622	EPA 6020B	38720
2625466001	MCM-19	EPA 7470A	38630	EPA 7470A	38698
2625466002	MCM-20	EPA 7470A	38630	EPA 7470A	38698
2625466003	MCM-18	EPA 7470A	38630	EPA 7470A	38698
2625466004	FBL110719	EPA 7470A	38630	EPA 7470A	38698
2625466005	EQBL110719	EPA 7470A	38630	EPA 7470A	38698
2625466006	DUP-1	EPA 7470A	38630	EPA 7470A	38698
2625466001	MCM-19	SM 2540C	38694		
2625466002	MCM-20	SM 2540C	38694		
2625466003	MCM-18	SM 2540C	38694		
2625466004	FBL110719	SM 2540C	38694		
2625466005	EQBL110719	SM 2540C	38694		
2625466006	DUP-1	SM 2540C	38694		
2625466001	MCM-19	EPA 300.0	38709		
2625466002	MCM-20	EPA 300.0	38709		
2625466003	MCM-18	EPA 300.0	38709		
2625466004	FBL110719	EPA 300.0	38709		
2625466005	EQBL110719	EPA 300.0	38709		
2625466006	DUP-1	EPA 300.0	38709		

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Document Name:  
Bottle Identification Form (BIF)

Document No.:  
F-CAR-CS-043-Rev.00

Document Issued: March 14, 2019  
Page 1 of 1

Issuing Authority:  
Pace Carolinas Quality Office

\*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

\*\*Bottom half of box is to list number of bottle

Project #

Matrix	Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2SO3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)		
	1			1	2																								
	2																												
	3																												
	4																												
	5																												
	6																												
	7																												
	8																												
	9																												
	10																												
	11																												
	12																												

For all

**pH Adjustment Log for Preserved Samples**

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

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

December 10, 2019

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

RE: Project: Georgia Power - Plant McManus  
Pace Project No.: 2625465

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on November 08, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



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

Enclosures

cc: Lauren Petty, Southern Company Services, Inc.  
Kevin Stephenson, Resolute Environmental & Water  
Resources Consulting, LLC  
Rebecca Thornton, Pace Analytical Atlanta  
Stephen Wilson, Resolute Environmental & Water  
Resources Consulting, LLC



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: Georgia Power - Plant McManus  
Pace Project No.: 2625465

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### **Pace Analytical Services Pennsylvania**

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

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

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Georgia Power - Plant McManus  
Pace Project No.: 2625465

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2625465001	MCM-19	Water	11/07/19 08:56	11/08/19 10:10
2625465002	MCM-20	Water	11/07/19 11:00	11/08/19 10:10
2625465003	MCM-18	Water	11/07/19 13:30	11/08/19 10:10
2625465004	FBL110719	Water	11/07/19 13:58	11/08/19 10:10
2625465005	EQBL110719	Water	11/07/19 14:04	11/08/19 10:10
2625465006	DUP-1	Water	11/07/19 00:00	11/08/19 10:10

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### SAMPLE ANALYTE COUNT

Project: Georgia Power - Plant McManus  
Pace Project No.: 2625465

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2625465001	MCM-19	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2625465002	MCM-20	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2625465003	MCM-18	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2625465004	FBL110719	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2625465005	EQBL110719	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2625465006	DUP-1	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Georgia Power - Plant McManus

Pace Project No.: 2625465

**Sample: MCM-19**      **Lab ID: 2625465001**      Collected: 11/07/19 08:56      Received: 11/08/19 10:10      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>7.04 ± 1.39 (0.538)</b> <b>C:93% T:NA</b>	pCi/L	12/05/19 07:43	13982-63-3	
Radium-228	EPA 9320	<b>10.7 ± 2.08 (0.544)</b> <b>C:76% T:94%</b>	pCi/L	12/05/19 12:10	15262-20-1	
Total Radium	Total Radium Calculation	<b>17.7 ± 3.47 (1.08)</b>	pCi/L	12/06/19 12:17	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Georgia Power - Plant McManus

Pace Project No.: 2625465

**Sample: MCM-20**      **Lab ID: 2625465002**      Collected: 11/07/19 11:00      Received: 11/08/19 10:10      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>12.2 ± 2.15 (0.343)</b> C:96% T:NA	pCi/L	12/05/19 07:43	13982-63-3	
Radium-228	EPA 9320	<b>26.0 ± 4.80 (0.564)</b> C:78% T:95%	pCi/L	12/05/19 12:10	15262-20-1	
Total Radium	Total Radium Calculation	<b>38.2 ± 6.95 (0.907)</b>	pCi/L	12/06/19 12:17	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Georgia Power - Plant McManus

Pace Project No.: 2625465

**Sample: MCM-18**      **Lab ID: 2625465003**      Collected: 11/07/19 13:30      Received: 11/08/19 10:10      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>7.99 ± 1.53 (0.451)</b> <b>C:94% T:NA</b>	pCi/L	12/05/19 07:44	13982-63-3	
Radium-228	EPA 9320	<b>6.84 ± 1.40 (0.578)</b> <b>C:82% T:89%</b>	pCi/L	12/05/19 15:18	15262-20-1	
Total Radium	Total Radium Calculation	<b>14.8 ± 2.93 (1.03)</b>	pCi/L	12/06/19 12:17	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Georgia Power - Plant McManus

Pace Project No.: 2625465

**Sample: FBL110719**      **Lab ID: 2625465004**      Collected: 11/07/19 13:58      Received: 11/08/19 10:10      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.206 ± 0.258 (0.541)</b> C:92% T:NA	pCi/L	12/05/19 07:44	13982-63-3	
Radium-228	EPA 9320	<b>0.201 ± 0.268 (0.569)</b> C:82% T:87%	pCi/L	12/05/19 15:18	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.407 ± 0.526 (1.11)</b>	pCi/L	12/06/19 12:17	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Georgia Power - Plant McManus

Pace Project No.: 2625465

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.437 ± 0.332 (0.605)</b> C:93% T:NA	pCi/L	12/05/19 07:44	13982-63-3	
Radium-228	EPA 9320	<b>0.478 ± 0.310 (0.576)</b> C:82% T:89%	pCi/L	12/05/19 15:18	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.915 ± 0.642 (1.18)</b>	pCi/L	12/06/19 12:17	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Georgia Power - Plant McManus

Pace Project No.: 2625465

**Sample: DUP-1**      **Lab ID: 2625465006**      Collected: 11/07/19 00:00      Received: 11/08/19 10:10      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>7.51 ± 1.46 (0.343)</b> <b>C:96% T:NA</b>	pCi/L	12/05/19 07:31	13982-63-3	
Radium-228	EPA 9320	<b>11.0 ± 2.15 (0.608)</b> <b>C:81% T:92%</b>	pCi/L	12/05/19 15:18	15262-20-1	
Total Radium	Total Radium Calculation	<b>18.5 ± 3.61 (0.951)</b>	pCi/L	12/06/19 12:17	7440-14-4	

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Georgia Power - Plant McManus

Pace Project No.: 2625465

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QC Batch:	372720	Analysis Method:	EPA 9320
QC Batch Method:	EPA 9320	Analysis Description:	9320 Radium 228
Associated Lab Samples:	2625465001, 2625465002, 2625465003, 2625465004, 2625465005, 2625465006		

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METHOD BLANK:	1808830	Matrix:	Water
Associated Lab Samples:	2625465001, 2625465002, 2625465003, 2625465004, 2625465005, 2625465006		

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Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.109 ± 0.258 (0.575) C:85% T:83%	pCi/L	12/05/19 12:07	

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

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Georgia Power - Plant McManus

Pace Project No.: 2625465

QC Batch: 373533 Analysis Method: EPA 9315

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

Associated Lab Samples: 2625465001, 2625465002, 2625465003, 2625465004, 2625465005, 2625465006

METHOD BLANK: 1812548 Matrix: Water

Associated Lab Samples: 2625465001, 2625465002, 2625465003, 2625465004, 2625465005, 2625465006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.412 ± 0.265 (0.378) C:94% T:NA	pCi/L	12/05/19 07:43	

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

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## QUALIFIERS

Project: Georgia Power - Plant McManus  
Pace Project No.: 2625465

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.  
ND - Not Detected at or above adjusted reporting limit.  
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.  
MDL - Adjusted Method Detection Limit.  
PQL - Practical Quantitation Limit.  
RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.  
S - Surrogate  
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.  
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.  
LCS(D) - Laboratory Control Sample (Duplicate)  
MS(D) - Matrix Spike (Duplicate)  
DUP - Sample Duplicate  
RPD - Relative Percent Difference  
NC - Not Calculable.  
SG - Silica Gel - Clean-Up  
U - Indicates the compound was analyzed for, but not detected.  
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.  
Act - Activity  
Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).  
Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)  
(MDC) - Minimum Detectable Concentration  
Trac - Tracer Recovery (%)  
Carr - Carrier Recovery (%)  
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.  
TNI - The NELAC Institute.

### LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Georgia Power - Plant McManus  
Pace Project No.: 2625465

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2625465001	MCM-19	EPA 9315	373533		
2625465002	MCM-20	EPA 9315	373533		
2625465003	MCM-18	EPA 9315	373533		
2625465004	FBL110719	EPA 9315	373533		
2625465005	EQBL110719	EPA 9315	373533		
2625465006	DUP-1	EPA 9315	373533		
2625465001	MCM-19	EPA 9320	372720		
2625465002	MCM-20	EPA 9320	372720		
2625465003	MCM-18	EPA 9320	372720		
2625465004	FBL110719	EPA 9320	372720		
2625465005	EQBL110719	EPA 9320	372720		
2625465006	DUP-1	EPA 9320	372720		
2625465001	MCM-19	Total Radium Calculation	374277		
2625465002	MCM-20	Total Radium Calculation	374277		
2625465003	MCM-18	Total Radium Calculation	374277		
2625465004	FBL110719	Total Radium Calculation	374277		
2625465005	EQBL110719	Total Radium Calculation	374277		
2625465006	DUP-1	Total Radium Calculation	374277		

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Document Name:  
Bottle Identification Form (BIF)

Document Issued: March 14, 2019  
Page 1 of 1

Document No.:  
F-CAR-CS-043-Rev.00

Issuing Authority:  
Pace Carolinas Quality Office

\*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Project #

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

\*\*Bottom half of box is to list number of bottle

Matrix	Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2SO3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	
	1			1	2																							
	2																											
	3																											
	4																											
	5																											
	6																											
	7																											
	8																											
	9																											
	10																											
	11																											
	12																											

For all

**pH Adjustment Log for Preserved Samples**

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

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

December 10, 2019

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

RE: Project: Georgia Power-Plant McManus  
Pace Project No.: 2625920

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on November 20, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



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

Enclosures

cc: Lauren Petty, Southern Company Services, Inc.  
Kevin Stephenson, Resolute Environmental & Water  
Resources Consulting, LLC  
Rebecca Thornton, Pace Analytical Atlanta  
Stephen Wilson, Resolute Environmental & Water  
Resources Consulting, LLC



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: Georgia Power-Plant McManus  
Pace Project No.: 2625920

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### **Pace Analytical Services Atlanta**

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

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

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Georgia Power-Plant McManus  
Pace Project No.: 2625920

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2625920001	MCM-18	Water	11/18/19 15:10	11/20/19 09:10
2625920002	MCM-19	Water	11/19/19 09:36	11/20/19 09:10
2625920003	MCM-20	Water	11/19/19 11:00	11/20/19 09:10
2625920004	DUP-1	Water	11/18/19 00:00	11/20/19 09:10
2625920005	FBL111819	Water	11/18/19 16:04	11/20/19 09:10
2625920006	EQBL111819	Water	11/18/19 16:10	11/20/19 09:10

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### SAMPLE ANALYTE COUNT

Project: Georgia Power-Plant McManus

Pace Project No.: 2625920

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2625920001	MCM-18	EPA 6020B	CSW	15
		EPA 7470A	DRB	1
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2625920002	MCM-19	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2625920003	MCM-20	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2625920004	DUP-1	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2625920005	FBL111819	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2625920006	EQBL111819	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	ALW	1
		EPA 300.0	MWB	3

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## ANALYTICAL RESULTS

Project: Georgia Power-Plant McManus  
Pace Project No.: 2625920

Sample: MCM-18		Lab ID: 2625920001		Collected: 11/18/19 15:10		Received: 11/20/19 09:10		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.030	0.0027	10	11/22/19 17:10	11/27/19 15:43	7440-36-0	
Arsenic	<b>0.012J</b>	mg/L	0.050	0.0035	10	11/22/19 17:10	11/27/19 15:43	7440-38-2	
Barium	<b>0.11</b>	mg/L	0.10	0.0049	10	11/22/19 17:10	11/27/19 15:43	7440-39-3	
Beryllium	<b>0.0063J</b>	mg/L	0.030	0.00074	10	11/22/19 17:10	11/27/19 15:43	7440-41-7	
Boron	<b>0.29J</b>	mg/L	0.40	0.049	10	11/22/19 17:10	11/27/19 15:43	7440-42-8	
Cadmium	ND	mg/L	0.025	0.0011	10	11/22/19 17:10	11/27/19 15:43	7440-43-9	
Calcium	<b>41.8</b>	mg/L	1.0	0.11	10	11/22/19 17:10	11/27/19 15:43	7440-70-2	M6
Chromium	<b>0.0046J</b>	mg/L	0.10	0.0039	10	11/22/19 17:10	11/27/19 15:43	7440-47-3	
Cobalt	ND	mg/L	0.025	0.0030	10	11/22/19 17:10	11/27/19 15:43	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	11/22/19 17:10	11/26/19 20:49	7439-92-1	
Lithium	ND	mg/L	0.10	0.0078	10	11/22/19 17:10	11/27/19 15:43	7439-93-2	
Molybdenum	ND	mg/L	0.10	0.0095	10	11/22/19 17:10	11/27/19 15:43	7439-98-7	
Potassium	<b>14.2</b>	mg/L	5.0	1.3	50	11/22/19 17:10	11/26/19 20:54	7440-09-7	M6
Selenium	ND	mg/L	0.10	0.013	10	11/22/19 17:10	11/27/19 15:43	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	11/22/19 17:10	11/26/19 20:49	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	11/22/19 15:25	11/22/19 19:29	7439-97-6	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>4030</b>	mg/L	10.0	10.0	1		11/22/19 14:03		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>6970</b>	mg/L	1000	24.0	1000		11/26/19 19:22	16887-00-6	M1
Fluoride	<b>0.52</b>	mg/L	0.30	0.029	1		11/26/19 09:35	16984-48-8	M1
Sulfate	<b>737</b>	mg/L	50.0	0.85	50		11/26/19 16:20	14808-79-8	M1

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### ANALYTICAL RESULTS

Project: Georgia Power-Plant McManus  
Pace Project No.: 2625920

Sample: <b>MCM-19</b>		Lab ID: <b>2625920002</b>		Collected: 11/19/19 09:36		Received: 11/20/19 09:10		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.030	0.0027	10	11/22/19 17:10	11/27/19 16:03	7440-36-0	D3
Arsenic	<b>0.019J</b>	mg/L	0.050	0.0035	10	11/22/19 17:10	11/27/19 16:03	7440-38-2	D3
Barium	<b>0.13</b>	mg/L	0.10	0.0049	10	11/22/19 17:10	11/27/19 16:03	7440-39-3	D3
Beryllium	<b>0.014J</b>	mg/L	0.030	0.00074	10	11/22/19 17:10	11/27/19 16:03	7440-41-7	D3
Boron	<b>0.83</b>	mg/L	0.40	0.049	10	11/22/19 17:10	11/27/19 16:03	7440-42-8	
Cadmium	ND	mg/L	0.025	0.0011	10	11/22/19 17:10	11/27/19 16:03	7440-43-9	D3
Calcium	<b>152</b>	mg/L	5.0	0.55	50	11/22/19 17:10	11/26/19 21:52	7440-70-2	
Chromium	<b>0.0059J</b>	mg/L	0.10	0.0039	10	11/22/19 17:10	11/27/19 16:03	7440-47-3	D3
Cobalt	ND	mg/L	0.025	0.0030	10	11/22/19 17:10	11/27/19 16:03	7440-48-4	D3
Lead	ND	mg/L	0.050	0.00046	10	11/22/19 17:10	11/27/19 16:03	7439-92-1	D3
Lithium	<b>0.020J</b>	mg/L	0.10	0.0078	10	11/22/19 17:10	11/27/19 16:03	7439-93-2	D3
Molybdenum	ND	mg/L	0.10	0.0095	10	11/22/19 17:10	11/27/19 16:03	7439-98-7	D3
Selenium	<b>0.039J</b>	mg/L	0.10	0.013	10	11/22/19 17:10	11/27/19 16:03	7782-49-2	D3
Thallium	ND	mg/L	0.010	0.00052	10	11/22/19 17:10	11/27/19 16:03	7440-28-0	D3
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	11/22/19 15:25	11/22/19 19:31	7439-97-6	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>10000</b>	mg/L	10.0	10.0	1		11/22/19 14:04		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>5650</b>	mg/L	1000	24.0	1000		11/26/19 19:44	16887-00-6	
Fluoride	<b>0.033J</b>	mg/L	0.30	0.029	1		11/26/19 09:58	16984-48-8	
Sulfate	<b>795</b>	mg/L	100	1.7	100		11/26/19 16:42	14808-79-8	

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## ANALYTICAL RESULTS

Project: Georgia Power-Plant McManus  
Pace Project No.: 2625920

Sample: <b>MCM-20</b>		Lab ID: <b>2625920003</b>		Collected: 11/19/19 11:00		Received: 11/20/19 09:10		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.030	0.0027	10	11/22/19 17:10	11/27/19 16:14	7440-36-0	D3
Arsenic	<b>0.031J</b>	mg/L	0.050	0.0035	10	11/22/19 17:10	11/27/19 16:14	7440-38-2	D3
Barium	<b>0.14</b>	mg/L	0.10	0.0049	10	11/22/19 17:10	11/27/19 16:14	7440-39-3	
Beryllium	<b>0.015J</b>	mg/L	0.030	0.00074	10	11/22/19 17:10	11/27/19 16:14	7440-41-7	D3
Boron	<b>1.3</b>	mg/L	0.40	0.049	10	11/22/19 17:10	11/27/19 16:14	7440-42-8	
Cadmium	ND	mg/L	0.025	0.0011	10	11/22/19 17:10	11/27/19 16:14	7440-43-9	D3
Calcium	<b>169</b>	mg/L	5.0	0.55	50	11/22/19 17:10	11/26/19 22:03	7440-70-2	
Chromium	<b>0.0096J</b>	mg/L	0.10	0.0039	10	11/22/19 17:10	11/27/19 16:14	7440-47-3	D3
Cobalt	<b>0.022J</b>	mg/L	0.025	0.0030	10	11/22/19 17:10	11/27/19 16:14	7440-48-4	D3
Lead	<b>0.0013J</b>	mg/L	0.050	0.00046	10	11/22/19 17:10	11/27/19 16:14	7439-92-1	D3
Lithium	<b>0.023J</b>	mg/L	0.10	0.0078	10	11/22/19 17:10	11/27/19 16:14	7439-93-2	D3
Molybdenum	ND	mg/L	0.10	0.0095	10	11/22/19 17:10	11/27/19 16:14	7439-98-7	D3
Selenium	<b>0.047J</b>	mg/L	0.10	0.013	10	11/22/19 17:10	11/27/19 16:14	7782-49-2	D3
Thallium	ND	mg/L	0.010	0.00052	10	11/22/19 17:10	11/27/19 16:14	7440-28-0	D3
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	11/22/19 15:25	11/22/19 19:34	7439-97-6	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>13300</b>	mg/L	10.0	10.0	1		11/22/19 14:04		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>8130</b>	mg/L	1000	24.0	1000		11/26/19 20:06	16887-00-6	
Fluoride	<b>1.2</b>	mg/L	0.30	0.029	1		11/26/19 10:20	16984-48-8	
Sulfate	<b>1140</b>	mg/L	100	1.7	100		11/26/19 17:04	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Georgia Power-Plant McManus  
Pace Project No.: 2625920

Sample: DUP-1		Lab ID: 2625920004		Collected: 11/18/19 00:00		Received: 11/20/19 09:10		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.030	0.0027	10	11/22/19 17:10	11/27/19 16:20	7440-36-0	D3
Arsenic	<b>0.012J</b>	mg/L	0.050	0.0035	10	11/22/19 17:10	11/27/19 16:20	7440-38-2	D3
Barium	<b>0.11</b>	mg/L	0.10	0.0049	10	11/22/19 17:10	11/27/19 16:20	7440-39-3	
Beryllium	<b>0.0052</b>	mg/L	0.0030	0.000074	1	11/22/19 17:10	11/26/19 22:09	7440-41-7	
Boron	<b>0.23</b>	mg/L	0.040	0.0049	1	11/22/19 17:10	11/26/19 22:09	7440-42-8	
Cadmium	ND	mg/L	0.025	0.0011	10	11/22/19 17:10	11/27/19 16:20	7440-43-9	D3
Calcium	<b>41.8</b>	mg/L	1.0	0.11	10	11/22/19 17:10	11/27/19 16:20	7440-70-2	
Chromium	<b>0.0040J</b>	mg/L	0.10	0.0039	10	11/22/19 17:10	11/27/19 16:20	7440-47-3	D3
Cobalt	ND	mg/L	0.025	0.0030	10	11/22/19 17:10	11/27/19 16:20	7440-48-4	D3
Lead	ND	mg/L	0.0050	0.000046	1	11/22/19 17:10	11/26/19 22:09	7439-92-1	
Lithium	<b>0.0045J</b>	mg/L	0.010	0.00078	1	11/22/19 17:10	11/26/19 22:09	7439-93-2	
Molybdenum	ND	mg/L	0.10	0.0095	10	11/22/19 17:10	11/27/19 16:20	7439-98-7	D3
Selenium	<b>0.014J</b>	mg/L	0.10	0.013	10	11/22/19 17:10	11/27/19 16:20	7782-49-2	D3
Thallium	ND	mg/L	0.0010	0.000052	1	11/22/19 17:10	11/26/19 22:09	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	11/22/19 15:25	11/22/19 19:36	7439-97-6	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>3960</b>	mg/L	10.0	10.0	1		11/22/19 14:03		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>2140</b>	mg/L	1000	24.0	1000		11/26/19 20:28	16887-00-6	
Fluoride	<b>0.55</b>	mg/L	0.30	0.029	1		11/26/19 10:42	16984-48-8	
Sulfate	<b>381</b>	mg/L	50.0	0.85	50		11/26/19 17:26	14808-79-8	

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## ANALYTICAL RESULTS

Project: Georgia Power-Plant McManus  
Pace Project No.: 2625920

Sample: <b>FBL111819</b>		Lab ID: <b>2625920005</b>		Collected: 11/18/19 16:04	Received: 11/20/19 09:10	Matrix: Water				
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	11/22/19 17:10	11/26/19 22:20	7440-36-0		
Arsenic	<b>0.0010J</b>	mg/L	0.0050	0.00035	1	11/22/19 17:10	11/26/19 22:20	7440-38-2		
Barium	ND	mg/L	0.010	0.00049	1	11/22/19 17:10	11/26/19 22:20	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	11/22/19 17:10	11/26/19 22:20	7440-41-7		
Boron	ND	mg/L	0.040	0.0049	1	11/22/19 17:10	11/26/19 22:20	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	11/22/19 17:10	11/26/19 22:20	7440-43-9		
Calcium	<b>0.036J</b>	mg/L	0.10	0.011	1	11/22/19 17:10	11/26/19 22:20	7440-70-2		
Chromium	ND	mg/L	0.010	0.00039	1	11/22/19 17:10	11/26/19 22:20	7440-47-3		
Cobalt	ND	mg/L	0.0025	0.00030	1	11/22/19 17:10	11/26/19 22:20	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	11/22/19 17:10	11/26/19 22:20	7439-92-1		
Lithium	ND	mg/L	0.010	0.00078	1	11/22/19 17:10	11/26/19 22:20	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	11/22/19 17:10	11/26/19 22:20	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	11/22/19 17:10	11/26/19 22:20	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	11/22/19 17:10	11/26/19 22:20	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	11/22/19 15:25	11/22/19 19:38	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	ND	mg/L	10.0	10.0	1		11/22/19 14:03			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>0.99J</b>	mg/L	1.0	0.024	1		11/26/19 11:04	16887-00-6		
Fluoride	ND	mg/L	0.30	0.029	1		11/26/19 11:04	16984-48-8		
Sulfate	<b>1.5</b>	mg/L	1.0	0.017	1		11/26/19 11:04	14808-79-8		

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### ANALYTICAL RESULTS

Project: Georgia Power-Plant McManus  
Pace Project No.: 2625920

Sample: EQBL111819		Lab ID: 2625920006		Collected: 11/18/19 16:10		Received: 11/20/19 09:10		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	11/22/19 17:10	11/26/19 22:26	7440-36-0	
Arsenic	<b>0.0011J</b>	mg/L	0.0050	0.00035	1	11/22/19 17:10	11/26/19 22:26	7440-38-2	
Barium	ND	mg/L	0.010	0.00049	1	11/22/19 17:10	11/26/19 22:26	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	11/22/19 17:10	11/26/19 22:26	7440-41-7	
Boron	ND	mg/L	0.040	0.0049	1	11/22/19 17:10	11/26/19 22:26	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	11/22/19 17:10	11/26/19 22:26	7440-43-9	
Calcium	<b>0.041J</b>	mg/L	0.10	0.011	1	11/22/19 17:10	11/26/19 22:26	7440-70-2	
Chromium	<b>0.00041J</b>	mg/L	0.010	0.00039	1	11/22/19 17:10	11/26/19 22:26	7440-47-3	
Cobalt	ND	mg/L	0.0025	0.00030	1	11/22/19 17:10	11/26/19 22:26	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	11/22/19 17:10	11/26/19 22:26	7439-92-1	
Lithium	ND	mg/L	0.010	0.00078	1	11/22/19 17:10	11/26/19 22:26	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	11/22/19 17:10	11/26/19 22:26	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	11/22/19 17:10	11/26/19 22:26	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	11/22/19 17:10	11/26/19 22:26	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	11/22/19 15:25	11/22/19 19:41	7439-97-6	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	ND	mg/L	10.0	10.0	1		11/22/19 14:03		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>0.36J</b>	mg/L	1.0	0.024	1		11/26/19 11:26	16887-00-6	
Fluoride	<b>0.039J</b>	mg/L	0.30	0.029	1		11/26/19 11:26	16984-48-8	
Sulfate	<b>0.093J</b>	mg/L	1.0	0.017	1		11/26/19 11:26	14808-79-8	

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### QUALITY CONTROL DATA

Project: Georgia Power-Plant McManus

Pace Project No.: 2625920

QC Batch: 39402

Analysis Method: EPA 7470A

QC Batch Method: EPA 7470A

Analysis Description: 7470 Mercury

Associated Lab Samples: 2625920001, 2625920002, 2625920003, 2625920004, 2625920005, 2625920006

METHOD BLANK: 179071

Matrix: Water

Associated Lab Samples: 2625920001, 2625920002, 2625920003, 2625920004, 2625920005, 2625920006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	11/22/19 18:55	

LABORATORY CONTROL SAMPLE: 179072

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0023	93	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 179073 179074

Parameter	Units	179073		179074		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2625809031 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Mercury	mg/L	ND	0.0025	0.0025	0.0025	0.0024	99	97	75-125	2	20

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### QUALITY CONTROL DATA

Project: Georgia Power-Plant McManus  
Pace Project No.: 2625920

QC Batch: 39405 Analysis Method: EPA 6020B  
QC Batch Method: EPA 3005A Analysis Description: 6020B MET  
Associated Lab Samples: 2625920001, 2625920002, 2625920003, 2625920004, 2625920005, 2625920006

METHOD BLANK: 179084 Matrix: Water  
Associated Lab Samples: 2625920001, 2625920002, 2625920003, 2625920004, 2625920005, 2625920006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	11/26/19 20:37	
Arsenic	mg/L	ND	0.0050	0.00035	11/26/19 20:37	
Barium	mg/L	ND	0.010	0.00049	11/26/19 20:37	
Beryllium	mg/L	ND	0.0030	0.000074	11/26/19 20:37	
Boron	mg/L	ND	0.040	0.0049	11/26/19 20:37	
Cadmium	mg/L	ND	0.0025	0.00011	11/26/19 20:37	
Calcium	mg/L	ND	0.10	0.011	11/26/19 20:37	
Chromium	mg/L	ND	0.010	0.00039	11/26/19 20:37	
Cobalt	mg/L	ND	0.0025	0.00030	11/26/19 20:37	
Lead	mg/L	ND	0.0050	0.000046	11/26/19 20:37	
Lithium	mg/L	ND	0.010	0.00078	11/26/19 20:37	
Molybdenum	mg/L	ND	0.010	0.00095	11/26/19 20:37	
Potassium	mg/L	ND	0.10	0.026	11/26/19 20:37	
Selenium	mg/L	ND	0.010	0.0013	11/26/19 20:37	
Thallium	mg/L	ND	0.0010	0.000052	11/26/19 20:37	

LABORATORY CONTROL SAMPLE: 179085

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.11	106	80-120	
Arsenic	mg/L	0.1	0.10	103	80-120	
Barium	mg/L	0.1	0.11	105	80-120	
Beryllium	mg/L	0.1	0.11	106	80-120	
Boron	mg/L	1	1.1	106	80-120	
Cadmium	mg/L	0.1	0.11	107	80-120	
Calcium	mg/L	1	1.0	103	80-120	
Chromium	mg/L	0.1	0.10	104	80-120	
Cobalt	mg/L	0.1	0.10	102	80-120	
Lead	mg/L	0.1	0.10	105	80-120	
Lithium	mg/L	0.1	0.11	107	80-120	
Molybdenum	mg/L	0.1	0.10	104	80-120	
Potassium	mg/L	1	0.97	97	80-120	
Selenium	mg/L	0.1	0.10	104	80-120	
Thallium	mg/L	0.1	0.10	103	80-120	

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**QUALITY CONTROL DATA**

Project: Georgia Power-Plant McManus

Pace Project No.: 2625920

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 179086		179087		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2625920001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Antimony	mg/L	ND	0.1	0.1	0.097	0.10	97	99	75-125	3	20		
Arsenic	mg/L	0.012J	0.1	0.1	0.11	0.11	98	100	75-125	1	20		
Barium	mg/L	0.11	0.1	0.1	0.20	0.21	94	102	75-125	4	20		
Beryllium	mg/L	0.0063J	0.1	0.1	0.10	0.11	98	101	75-125	3	20		
Boron	mg/L	0.29J	1	1	1.2	1.3	96	99	75-125	3	20		
Cadmium	mg/L	ND	0.1	0.1	0.096	0.098	96	97	75-125	2	20		
Calcium	mg/L	41.8	1	1	41.8	44.5	-3	270	75-125	6	20	M6	
Chromium	mg/L	0.0046J	0.1	0.1	0.098J	0.11	93	101	75-125	8	20		
Cobalt	mg/L	ND	0.1	0.1	0.096	0.098	96	98	75-125	2	20		
Lead	mg/L	ND	0.1	0.1	0.087	0.088	87	88	75-125	2	20		
Lithium	mg/L	ND	0.1	0.1	0.10	0.11	100	102	75-125		20		
Molybdenum	mg/L	ND	0.1	0.1	0.10	0.10	101	102	75-125	0	20		
Potassium	mg/L	14.2	1	1	14.3	15.2	19	109	75-125	6	20	M6	
Selenium	mg/L	ND	0.1	0.1	0.11	0.11	99	99	75-125	0	20		
Thallium	mg/L	ND	0.1	0.1	0.088	0.090	88	90	75-125	2	20		

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### QUALITY CONTROL DATA

Project: Georgia Power-Plant McManus  
Pace Project No.: 2625920

QC Batch: 39545 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 2625920001, 2625920002, 2625920003, 2625920004, 2625920005, 2625920006

METHOD BLANK: 179782 Matrix: Water  
Associated Lab Samples: 2625920001, 2625920002, 2625920003, 2625920004, 2625920005, 2625920006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.024	11/26/19 07:45	
Fluoride	mg/L	ND	0.30	0.029	11/26/19 07:45	
Sulfate	mg/L	ND	1.0	0.017	11/26/19 07:45	

LABORATORY CONTROL SAMPLE: 179783

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	10	10.0	100	90-110	
Fluoride	mg/L	10	10.1	101	90-110	
Sulfate	mg/L	10	10.5	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 179784 179785

Parameter	Units	2626038001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	9.1	10	10	18.5	18.5	94	94	90-110	0	15	
Fluoride	mg/L	0.057J	10	10	10.0	10.0	100	100	90-110	0	15	
Sulfate	mg/L	619	10	10	185	185	-4340	-4340	90-110	0	15	M1

MATRIX SPIKE SAMPLE: 179786

Parameter	Units	2625920001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	6970	10	174	-68000	90-110	M1
Fluoride	mg/L	0.52	10	6.1	56	90-110	M1
Sulfate	mg/L	737	10	132	-6050	90-110	M1

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## QUALIFIERS

Project: Georgia Power-Plant McManus

Pace Project No.: 2625920

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### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

### ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

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

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

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Georgia Power-Plant McManus  
Pace Project No.: 2625920

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2625920001	MCM-18	EPA 3005A	39405	EPA 6020B	39453
2625920002	MCM-19	EPA 3005A	39405	EPA 6020B	39453
2625920003	MCM-20	EPA 3005A	39405	EPA 6020B	39453
2625920004	DUP-1	EPA 3005A	39405	EPA 6020B	39453
2625920005	FBL111819	EPA 3005A	39405	EPA 6020B	39453
2625920006	EQBL111819	EPA 3005A	39405	EPA 6020B	39453
2625920001	MCM-18	EPA 7470A	39402	EPA 7470A	39447
2625920002	MCM-19	EPA 7470A	39402	EPA 7470A	39447
2625920003	MCM-20	EPA 7470A	39402	EPA 7470A	39447
2625920004	DUP-1	EPA 7470A	39402	EPA 7470A	39447
2625920005	FBL111819	EPA 7470A	39402	EPA 7470A	39447
2625920006	EQBL111819	EPA 7470A	39402	EPA 7470A	39447
2625920001	MCM-18	SM 2540C	39395		
2625920002	MCM-19	SM 2540C	39395		
2625920003	MCM-20	SM 2540C	39395		
2625920004	DUP-1	SM 2540C	39395		
2625920005	FBL111819	SM 2540C	39395		
2625920006	EQBL111819	SM 2540C	39395		
2625920001	MCM-18	EPA 300.0	39545		
2625920002	MCM-19	EPA 300.0	39545		
2625920003	MCM-20	EPA 300.0	39545		
2625920004	DUP-1	EPA 300.0	39545		
2625920005	FBL111819	EPA 300.0	39545		
2625920006	EQBL111819	EPA 300.0	39545		

### REPORT OF LABORATORY ANALYSIS

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# CHAIN-OF-CUSTODY / Analytical Request Document

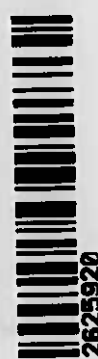
The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

<b>Section A</b>		<b>Section B</b>		<b>Section C</b>	
<b>Client Information:</b> Company: Georgia Power Address: 2490 Marner Road Atlanta, GA 30339 Email: labraham@southemco.com Phone: (404) 508-7238 Acquisition Due Date:		<b>Required Project Information:</b> Report To: Jhu Abraham / Lauren Peety Copy To: Resolute, VS, SATTI, LM Purchase Order #: SCS10382775 Project Name: Georgia Power - Plant McManus CCR Scope Project #:		<b>Invoice Information:</b> Attention: SCSinvoicing@southemco.com Company Name: Address: Place Quote: Kevin Williams Place Project Manager: jhu (mailto:labraham@southemco.com) Place Profile #: 394.1.2	
<b>Matrix Code Legend:</b> DW: Drinking Water WW: Wastewater P: Product SL: Soil UR: Air OT: Tissue Other: Other		<b>Preservatives:</b> H2SO4 HNO3 HCl NaOH Na2S2O3 Methanol Other		<b>Analysis Test:</b> Metals App. III & App. IV Chloride, Fluoride, Sulfate TDS by 2540C	

ITEM #	MATRIX CODE	SAMPLE TYPE (G-GRAB C-COMP)	COLLECTED		DATE	TIME	SAMPLER TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Radium 226/228	Metals App. III & App. IV	Chloride, Fluoride, Sulfate	TDS by 2540C	Residual Chlorine (Y/N)
			START DATE	END DATE																	
1	DW	G	11/19/19	1510			4	1	3								X	X	X	X	
2	DW	G	11/19/19	1536			4	1	3								X	X	X	X	
3	DW	G	11/19/19	1100			4	1	3								X	X	X	X	
4	DW	G	11/19/19	-			4	1	3								X	X	X	X	
5	DW	G	11/19/19	1604			4	1	3								X	X	X	X	
6	DW	G	11/19/19	1610			4	1	3								X	X	X	X	

ADDITIONAL COMMENTS: Kevin Williams 11/19/19 1528 TO SATTI K. WELINGTON / TACE 11/20 0910 1-2 Y Y		RECEIVED BY / AFFILIATION: DATE: 11/19/19 TIME:		ACCEPTED BY / AFFILIATION: DATE: 11/19/19 TIME:	
SAMPLE CONDITIONS: Received on: (Y/N) Ice (Y/N) Custody Sealed (Y/N) Cooler (Y/N) Samples Intact (Y/N)		SAMPLER NAME AND SIGNATURE: PRINT Name of SAMPLER: SIGNATURE of SAMPLER: DATE Signed: 11/19/19			

**WO# : 2625920**



2625920



Client Name: \_\_\_\_\_

WO#: 2625920  
PM: KH Due Date: 11/27/19  
CLIENT: OAPower-CCR

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Other

Tracking #: 7781 5699 9778

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

Packing Material:  Bubble Wrap  Bubble Bags  None  Other Plastic bags

Thermometer Used 083

Cooler Temperature 1.2

Type of Ice:  Wet  Blue  None

Biological Tissue is Frozen: Yes No

Samples on ice, cooling process has begun  
Date and initials of person examining contents: \_\_\_\_\_

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

Field Data Required? Y / N

Client Notification/ Resolution:

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
3000 W28

Project Manager Review: \_\_\_\_\_ Date: \_\_\_\_\_

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

F-ALLC003rev.3, 11September2006

December 20, 2019

Mr. Joju Abraham  
Georgia Power  
2480 Maner Road  
Atlanta, GA 30339

RE: Project: 2625919  
Pace Project No.: 30337333

Dear Mr. Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on November 22, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Jacquelyn Collins  
jacquelyn.collins@pacelabs.com  
(724)850-5612  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: 2625919  
Pace Project No.: 30337333

### **Pace Analytical Services Pennsylvania**

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

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

## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 2625919  
Pace Project No.: 30337333

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2625919001	MCM-18	Water	11/18/19 15:10	11/22/19 09:30
2625919002	MCM-19	Water	11/19/19 09:36	11/22/19 09:30
2625919003	MCM-20	Water	11/19/19 11:00	11/22/19 09:30
2625919004	DUP-1	Water	11/18/19 00:01	11/22/19 09:30
2625919005	FBL111819	Water	11/18/19 16:04	11/22/19 09:30
2625919006	EQBL111819	Water	11/18/19 16:10	11/22/19 09:30

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 2625919  
Pace Project No.: 30337333

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2625919001	MCM-18	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2625919002	MCM-19	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2625919003	MCM-20	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2625919004	DUP-1	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2625919005	FBL111819	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2625919006	EQBL111819	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2625919  
Pace Project No.: 30337333

Sample: <b>MCM-18</b>		Lab ID: <b>2625919001</b>	Collected: 11/18/19 15:10	Received: 11/22/19 09:30	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>7.72 ± 1.37 (0.268)</b> C:90% T:NA	pCi/L	12/09/19 10:09	13982-63-3	
Radium-228	EPA 9320	<b>6.20 ± 1.33 (0.789)</b> C:77% T:87%	pCi/L	12/10/19 11:26	15262-20-1	
Total Radium	Total Radium Calculation	<b>13.9 ± 2.70 (1.06)</b>	pCi/L	12/17/19 10:40	7440-14-4	

Sample: <b>MCM-19</b>		Lab ID: <b>2625919002</b>	Collected: 11/19/19 09:36	Received: 11/22/19 09:30	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>6.56 ± 1.20 (0.286)</b> C:93% T:NA	pCi/L	12/09/19 10:09	13982-63-3	
Radium-228	EPA 9320	<b>12.3 ± 2.41 (0.858)</b> C:73% T:85%	pCi/L	12/10/19 11:06	15262-20-1	
Total Radium	Total Radium Calculation	<b>18.9 ± 3.61 (1.14)</b>	pCi/L	12/17/19 10:40	7440-14-4	

Sample: <b>MCM-20</b>		Lab ID: <b>2625919003</b>	Collected: 11/19/19 11:00	Received: 11/22/19 09:30	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>10.1 ± 1.71 (0.223)</b> C:92% T:NA	pCi/L	12/09/19 10:09	13982-63-3	
Radium-228	EPA 9320	<b>33.0 ± 6.09 (0.940)</b> C:77% T:85%	pCi/L	12/10/19 10:38	15262-20-1	
Total Radium	Total Radium Calculation	<b>43.1 ± 7.80 (1.16)</b>	pCi/L	12/17/19 10:40	7440-14-4	

Sample: <b>DUP-1</b>		Lab ID: <b>2625919004</b>	Collected: 11/18/19 00:01	Received: 11/22/19 09:30	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>8.26 ± 1.28 (0.164)</b> C:90% T:NA	pCi/L	12/17/19 19:32	13982-63-3	
Radium-228	EPA 9320	<b>6.47 ± 1.39 (0.902)</b> C:76% T:80%	pCi/L	12/10/19 10:38	15262-20-1	
Total Radium	Total Radium Calculation	<b>14.7 ± 2.67 (1.07)</b>	pCi/L	12/18/19 09:51	7440-14-4	

Sample: <b>FBL111819</b>		Lab ID: <b>2625919005</b>	Collected: 11/18/19 16:04	Received: 11/22/19 09:30	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.379 ± 0.147 (0.202)</b> C:90% T:NA	pCi/L	12/17/19 19:20	13982-63-3	
Radium-228	EPA 9320	<b>0.943 ± 0.545 (1.03)</b> C:75% T:76%	pCi/L	12/10/19 10:38	15262-20-1	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2625919  
Pace Project No.: 30337333

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	<b>1.32 ± 0.692 (1.23)</b>	pCi/L	12/18/19 09:51	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.369 ± 0.139 (0.180)</b> C:88% T:NA	pCi/L	12/17/19 17:02	13982-63-3	
Radium-228	EPA 9320	<b>0.269 ± 0.443 (0.962)</b> C:79% T:81%	pCi/L	12/10/19 10:38	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.638 ± 0.582 (1.14)</b>	pCi/L	12/18/19 09:51	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: 2625919  
Pace Project No.: 30337333

---

QC Batch:	375561	Analysis Method:	EPA 9315
QC Batch Method:	EPA 9315	Analysis Description:	9315 Total Radium
Associated Lab Samples:	2625919004, 2625919005, 2625919006		

---

METHOD BLANK:	1822073	Matrix:	Water
Associated Lab Samples:	2625919004, 2625919005, 2625919006		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.505 ± 0.245 (0.361) C:92% T:NA	pCi/L	12/17/19 19:27	

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

### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: 2625919  
Pace Project No.: 30337333

### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

### LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

## REPORT OF LABORATORY ANALYSIS

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# Chain of Custody



Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: GA  
 Cert. Needed:  Yes  No

Owner Received Date: 11/20/2019 Results Requested By: 12/20/2019

Workorder: 2625919 Workorder Name: GA Power-Plant McManus

Subcontract To

Kevin Herring  
 Pace Analytical Charlotte  
 9800 Kinney Ave.  
 Suite 100  
 Huntersville, NC 28078  
 Phone (704)875-9092

Pace Analytical Pittsburgh  
 1638 Roseytown Road  
 Suites 2,3, & 4  
 Greensburg, PA 15601  
 Phone (724)850-5600

Requested Analysis

WO#: 30337333



RAD 226/228

Preserved Containers

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	NOI	LAB USE ONLY
1	MCM-18	PS	11/18/2019 15:10	2625919001	Water	X	001
2	MCM-19	PS	11/19/2019 09:36	2625919002	Water	X	002
3	MCM-20	PS	11/19/2019 11:00	2625919003	Water	X	003
4	DUP-1	PS	11/18/2019 00:00	2625919004	Water	X	004
5	FBL111819	PS	11/18/2019 16:04	2625919005	Water	X	005
6	EQBL111819	PS	11/18/2019 16:10	2625919006	Water	X	006

Comments

Transfers	Released By	Date/Time	Received By	Date/Time	Received on Ice	Y or N	Samples Intact	Y or N
1	[Signature]	11.21.19	[Signature]	11/22/19 09:50				
2								
3								

Cooler Temperature on Receipt °C Custody Seal Y or N

\*\*\*In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pittsburgh Lab Sample Condition Upon Receipt



Client Name: Pace GA

Project # 30337333

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Other \_\_\_\_\_

Tracking #: 1069 9309 1935

Label	<u>SP</u>
LIMS Login	<u>SP</u>

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

Thermometer Used n/a    Type of Ice: Wet Blue None

Cooler Temperature Observed Temp \_\_\_\_\_ °C    Correction Factor: \_\_\_\_\_ °C    Final Temp: \_\_\_\_\_ °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot#	Date and Initials of person examining contents:
				<u>1000391</u>	<u>SP 11/25/19</u>
Chain of Custody Present:	/				
Chain of Custody Filled Out:	/				
Chain of Custody Relinquished:	/				
Sampler Name & Signature on COC:	/				
Sample Labels match COC:	/				
-Includes date/time/ID      Matrix: <u>WT</u>					
Samples Arrived within Hold Time:	/				
Short Hold Time Analysis (<72hr remaining):			/		
Rush Turn Around Time Requested:	/				
Sufficient Volume:	/				
Correct Containers Used:	/				
-Pace Containers Used:	/				
Containers Intact:	/				
Orthophosphate field filtered			/		
Hex Cr Aqueous sample field filtered			/		
Organic Samples checked for dechlorination:			/		
Filtered volume received for Dissolved tests	/				
All containers have been checked for preservation.					
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix				<u>pH 7</u>	
All containers meet method preservation requirements.	/			Initial when completed <u>SP</u>	Date/time of preservation
				Lot # of added preservative	
Headspace in VOA Vials (>6mm):			/		
Trip Blank Present:			/		
Trip Blank Custody Seals Present	/				
Rad Samples Screened < 0.5 mrem/hr	/			Initial when completed: <u>SP</u>	Date: <u>11/25/19</u>

Client Notification/ Resolution:

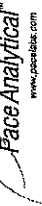
Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Contacted By: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

A check in this box indicates that additional information has been stored in reports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)  
 \*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

# Quality Control Sample Performance Assessment



*Analyst Must Manually Enter All Fields Highlighted in Yellow.*

Test: Ra-228  
Analyst: LAL  
Date: 12/6/2019  
Worklist: 51324  
Matrix: DW

Method Blank Assessment	
MB Sample ID	1813888
MB Concentration:	0.281
MB Counting Uncertainty:	0.161
MB MDC:	0.210
MB Numerical Performance Indicator:	3.41
MB Status vs. Numerical Indicator:	N/A
MB Status vs. MDC:	See Comment*

Laboratory Control Sample Assessment		LCS (Y or N)?	Y
		LCS51324	LCS051324
Count Date:		12/9/2019	12/9/2019
Spike I.D.:		19-033	19-033
Decay Corrected Spike Concentration (pCi/mL):		24.052	24.052
Volume Used (mL):		0.10	0.10
Aliquot Volume (L, g, F):		0.509	0.502
Target Conc. (pCi/L, g, F):		4.729	4.787
Uncertainty (Calculated):		0.057	0.057
Result (pCi/L, g, F):		4.949	5.014
LCS/LCSD Counting Uncertainty (pCi/L, g, F):		0.619	0.635
Numerical Performance Indicator:		0.69	0.70
Percent Recovery:		104.65%	104.74%
Status vs Numerical Indicator:		N/A	N/A
Status vs Recovery:		Pass	Pass
Upper % Recovery Limits:		125%	125%
Lower % Recovery Limits:		75%	75%

Duplicate Sample Assessment	
Sample I.D.:	LCS51324
Duplicate Sample I.D.:	LCS051324
Sample Result (pCi/L, g, F):	4.949
Sample Duplicate Result (pCi/L, g, F):	0.619
Sample Duplicate Counting Uncertainty (pCi/L, g, F):	5.014
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.635
Ave sample and/or duplicate results below RL?	NO
Duplicate Numerical Performance Indicator:	-0.144
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	0.09%
Duplicate Status vs Numerical Indicator:	N/A
Duplicate Status vs RPD:	Pass
% RPD Limit:	25%

## Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:  
\*The method blank result is below the reporting limit for this analysis and is acceptable.

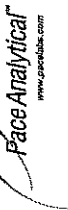
Sample Matrix Spike Control Assessment		MS/MSD 1	MS/MSD 2
Sample Collection Date:			
Sample I.D.:			
Sample MS I.D.:			
Sample MSD I.D.:			
Spike I.D.:			
MS/MSD Decay Corrected Spike Concentration (pCi/mL):			
Spike Volume Used in MS (mL):			
Spike Volume Used in MSD (mL):			
MS Aliquot (L, g, F):			
MS Target Conc. (pCi/L, g, F):			
MSD Aliquot (L, g, F):			
MSD Target Conc. (pCi/L, g, F):			
MS Spike Uncertainty (calculated):			
MSD Spike Uncertainty (calculated):			
Sample Result:			
Sample Result Counting Uncertainty (pCi/L, g, F):			
Sample Matrix Spike Result:			
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):			
Sample Matrix Spike Duplicate Result:			
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):			
MS Numerical Performance Indicator:			
MSD Numerical Performance Indicator:			
MS Percent Recovery:			
MSD Percent Recovery:			
MS Status vs Numerical Indicator:			
MSD Status vs Numerical Indicator:			
MS Status vs Recovery:			
MSD Status vs Recovery:			
MS/MSD Upper % Recovery Limits:			
MS/MSD Lower % Recovery Limits:			

Matrix Spike/Matrix Spike Duplicate Sample Assessment	
Sample I.D.:	
Sample MS I.D.:	
Sample MSD I.D.:	
Sample Matrix Spike Result:	
Sample Matrix Spike Duplicate Result:	
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	
Sample Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):	
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):	
Duplicate Numerical Performance Indicator:	
(Based on the Percent Recoveries) MS/MSD Duplicate RPD:	
MS/MSD Duplicate Status vs Numerical Indicator:	
MS/MSD Duplicate Status vs RPD:	
% RPD Limit:	

12/11/19

*Handwritten signature/initials*

# Quality Control Sample Performance Assessment



Test: Ra-228  
Analyst: LAL  
Date: 12/17/2019  
Worklist: 51448  
Matrix: DW

*Analyst Must Manually Enter All Fields Highlighted in Yellow.*

Method Blank Assessment	
MB Sample ID	1822073
MB concentration:	0.505
MIB Counting Uncertainty:	0.234
MB MDC:	0.361
MB Numerical Performance Indicator:	4.23
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	See Comment*

Laboratory Control Sample Assessment	
LCSID (Y or N)?	Y
LCS51448	LCS051448
12/17/2019	12/17/2019
Count Date:	12/17/2019
Spike I.D.:	19-033
Decay Corrected Spike Concentration (pCi/mL):	24.052
Volume Used (mL):	0.10
Aliquot Volume (L, g, F):	0.514
Target Conc. (pCi/L, g, F):	4.727
Uncertainty (Calculated):	0.056
Result (pCi/L, g, F):	4.575
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.347
Numerical Performance Indicator:	-0.85
Percent Recovery:	96.78%
Status vs Numerical Indicator:	N/A
Upper % Recovery Limits:	Pass
Lower % Recovery Limits:	125%
	75%

Duplicate Sample Assessment	
Sample I.D.:	LCS51448
Duplicate Sample I.D.:	LCS051448
Sample Result (pCi/L, g, F):	4.575
Sample Result Counting Uncertainty (pCi/L, g, F):	0.347
Sample Duplicate Result (pCi/L, g, F):	4.807
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.365
Are sample and/or duplicate results below RL?	NO
Duplicate Numerical Performance Indicator:	-0.904
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	5.86%
Duplicate Status vs Numerical Indicator:	N/A
Duplicate Status vs RPD:	Pass
% RPD Limit:	25%

## Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:  
\*The method blank result is below the reporting limit for this analysis and is acceptable.

Sample Matrix Spike Control Assessment		MS/MSD 1	MS/MSD 2
Sample Collection Date:	Sample I.D.:		
	Sample MS I.D.:		
	Sample MSD I.D.:		
	Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):	MS Aliquot (L, g, F):		
MS Target Conc. (pCi/L, g, F):	MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):	MS Spike Uncertainty (calculated):		
MS Spike Uncertainty (calculated):	MSD Spike Uncertainty (calculated):		
Sample Result:	Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:	Sample Matrix Spike Result:		
Sample Matrix Spike Duplicate Result:	Sample Matrix Spike Duplicate Result:		
MS Numerical Performance Indicator:	MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:	MSD Numerical Performance Indicator:		
MS Percent Recovery:	MSD Percent Recovery:		
MS Status vs Numerical Indicator:	MSD Status vs Numerical Indicator:		
MS Status vs Recovery:	MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:	MS/MSD Lower % Recovery Limits:		
MS/MSD Lower % Recovery Limits:			

Matrix Spike/Matrix Spike Duplicate Sample Assessment	
Sample I.D.:	Sample I.D.:
Sample MS I.D.:	Sample MS I.D.:
Sample MSD I.D.:	Sample MSD I.D.:
Sample Matrix Spike Result:	Sample Matrix Spike Result:
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	Matrix Spike Result Counting Uncertainty (pCi/L, g, F):
Sample Matrix Spike Duplicate Result:	Sample Matrix Spike Duplicate Result:
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):
Duplicate Numerical Performance Indicator:	Duplicate Numerical Performance Indicator:
(Based on the Percent Recoveries) MS/MSD Duplicate RPD:	(Based on the Percent Recoveries) MS/MSD Duplicate RPD:
MS/MSD Duplicate Status vs Numerical Indicator:	MS/MSD Duplicate Status vs RPD:
MS/MSD Duplicate Status vs RPD:	% RPD Limit:

MSB  
12-18-19  
LAM 12/18/19

# Quality Control Sample Performance Assessment



*Analyst Must Manually Enter All Fields Highlighted in Yellow.*

Test: Ra-228  
 Analyst: VAL  
 Date: 12/6/2019  
 Worklist: 51312  
 Matrix: WT

Method Blank Assessment	
MB Sample ID	1813920
MB concentration:	0.541
M/B 2 Sigma CSU:	0.343
MB MDC:	0.642
MB Numerical Performance Indicator:	3.10
MB Status vs Numerical Indicator:	Fail*
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	
	LCSD51312	LCSD51312
Count Date:	12/10/2019	12/10/2019
Spike I.D.:	19-026	19-026
Decay Corrected Spike Concentration (pCi/mL):	34.420	34.420
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.803	0.819
Target Conc. (pCi/L, g, F):	4.286	4.203
Uncertainty (Calculated):	0.210	0.206
Result (pCi/L, g, F):	4.681	4.872
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	1.081	1.116
Numerical Performance Indicator:	0.70	1.16
Percent Recovery:	109.20%	115.92%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Duplicate Sample Assessment	Duplicate Matrix Spike Assessment
Sample I.D.:	Sample I.D.
Duplicate Sample I.D.:	Sample MS I.D.
Sample Result (pCi/L, g, F):	Sample MSD I.D.
Sample Duplicate Result (pCi/L, g, F):	Sample Matrix Spike Result:
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	Sample Matrix Spike Duplicate Result:
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	Sample Matrix Spike Duplicate Duplicate Result:
Ave sample and/or duplicate results below RL?	Duplicate Numerical Performance Indicator:
NO	Duplicate Numerical Performance Indicator:
-0.241	(Based on the Percent Recoveries) MS/MSD Duplicate RPD:
5.97%	MS/MSD Duplicate Status vs Numerical Indicator:
Pass	MS/MSD Duplicate Status vs RPD:
Pass	% RPD Limit:
36%	% RPD Limit:

## Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

**Comments:**

if the lowest-activity sample in this batch is greater than ten times the blank value, the blank is acceptable; otherwise this batch must be re-prepped 12/20/19

*12/20/19*

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.:		
Sample MS I.D.:		
Sample MSD I.D.:		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc. (pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Sample Matrix Spike Duplicate Result:		
Sample Matrix Spike Duplicate Duplicate Result:		
MS Numerical Performance Indicator:		
MS Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Matrix Spike/Matrix Spike Duplicate Sample Assessment
Sample I.D.
Sample MS I.D.
Sample MSD I.D.
Sample Matrix Spike Result:
Sample Matrix Spike Duplicate Result:
Sample Matrix Spike Duplicate Duplicate Result:
Duplicate Numerical Performance Indicator:
Duplicate Numerical Performance Indicator:
(Based on the Percent Recoveries) MS/MSD Duplicate RPD:
MS/MSD Duplicate Status vs Numerical Indicator:
MS/MSD Duplicate Status vs RPD:
% RPD Limit:

December 20, 2019

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

RE: Project: GA POWER PLANT MCMANUS CCR  
Pace Project No.: 2626485

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on December 06, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



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

Enclosures

cc: Lea Millet, Resolute Environmental & Water Resources  
Lauren Petty, Southern Company Services, Inc.  
Kevin Stephenson, Resolute Environmental & Water  
Resources Consulting, LLC  
Rebecca Thornton, Pace Analytical Atlanta  
Stephen Wilson, Resolute Environmental & Water  
Resources Consulting, LLC



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: GA POWER PLANT MCMANUS CCR

Pace Project No.: 2626485

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### **Pace Analytical Services Atlanta**

110 Technology Parkway Peachtree Corners, GA 30092

Florida DOH Certification #: E87315

Georgia DW Inorganics Certification #: 812

Georgia DW Microbiology Certification #: 812

North Carolina Certification #: 381

South Carolina Certification #: 98011001

Virginia Certification #: 460204

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: GA POWER PLANT MCMANUS CCR  
Pace Project No.: 2626485

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2626485001	MCM-18	Water	12/05/19 16:00	12/06/19 09:35
2626485002	MCM-19	Water	12/04/19 14:56	12/06/19 09:35
2626485003	MCM-20	Water	12/04/19 16:10	12/06/19 09:35
2626485004	DUP-1	Water	12/04/19 00:00	12/06/19 09:35
2626485005	FBL120519	Water	12/05/19 14:54	12/06/19 09:35
2626485006	EQBL120519	Water	12/05/19 14:58	12/06/19 09:35

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: GA POWER PLANT MCMANUS CCR

Pace Project No.: 2626485

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2626485001	MCM-18	EPA 6020B	CSW	14	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		SM 2540C	ALW	1	PASI-GA
		EPA 300.0	MWB	3	PASI-GA
2626485002	MCM-19	EPA 6020B	CSW	14	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		SM 2540C	ALW	1	PASI-GA
		EPA 300.0	MWB	3	PASI-GA
2626485003	MCM-20	EPA 6020B	CSW	14	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		SM 2540C	ALW	1	PASI-GA
		EPA 300.0	MWB	3	PASI-GA
2626485004	DUP-1	EPA 6020B	CSW	14	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		SM 2540C	ALW	1	PASI-GA
		EPA 300.0	MWB	3	PASI-GA
2626485005	FBL120519	EPA 6020B	CSW	14	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		SM 2540C	ALW	1	PASI-GA
		EPA 300.0	MWB	3	PASI-GA
2626485006	EQBL120519	EPA 6020B	CSW	14	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		SM 2540C	ALW	1	PASI-GA
		EPA 300.0	MWB	3	PASI-GA

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: GA POWER PLANT MCMANUS CCR  
Pace Project No.: 2626485

Sample: MCM-18		Lab ID: 2626485001		Collected: 12/05/19 16:00		Received: 12/06/19 09:35		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	12/09/19 15:01	12/10/19 16:35	7440-36-0		
Arsenic	<b>0.0055</b>	mg/L	0.0050	0.00035	1	12/09/19 15:01	12/10/19 16:35	7440-38-2		
Barium	<b>0.12</b>	mg/L	0.010	0.00049	1	12/09/19 15:01	12/10/19 16:35	7440-39-3		
Beryllium	<b>0.0045</b>	mg/L	0.0030	0.000074	1	12/09/19 15:01	12/10/19 16:35	7440-41-7		
Boron	<b>0.23</b>	mg/L	0.040	0.0049	1	12/09/19 15:01	12/10/19 16:35	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	12/09/19 15:01	12/10/19 16:35	7440-43-9		
Calcium	<b>40.5</b>	mg/L	5.0	0.55	50	12/09/19 15:01	12/10/19 16:41	7440-70-2	M6	
Chromium	<b>0.0046J</b>	mg/L	0.010	0.00039	1	12/09/19 15:01	12/10/19 16:35	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	12/09/19 15:01	12/10/19 16:35	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	12/09/19 15:01	12/10/19 16:35	7439-92-1		
Lithium	<b>0.0042J</b>	mg/L	0.030	0.00078	1	12/09/19 15:01	12/10/19 16:35	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	12/09/19 15:01	12/10/19 16:35	7439-98-7		
Selenium	<b>0.032</b>	mg/L	0.010	0.0013	1	12/09/19 15:01	12/10/19 16:35	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	12/09/19 15:01	12/10/19 16:35	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	12/10/19 17:58	12/11/19 12:06	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>3840</b>	mg/L	10.0	10.0	1		12/11/19 17:47			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>2130</b>	mg/L	100	2.4	100		12/11/19 16:36	16887-00-6		
Fluoride	<b>0.50</b>	mg/L	0.30	0.029	1		12/11/19 08:43	16984-48-8		
Sulfate	<b>351</b>	mg/L	100	1.7	100		12/11/19 16:36	14808-79-8		

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: GA POWER PLANT MCMANUS CCR

Pace Project No.: 2626485

Sample: MCM-19		Lab ID: 2626485002		Collected: 12/04/19 14:56		Received: 12/06/19 09:35		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	<b>0.00041J</b>	mg/L	0.0030	0.00027	1	12/09/19 15:01	12/10/19 17:28	7440-36-0		
Arsenic	<b>0.016</b>	mg/L	0.0050	0.00035	1	12/09/19 15:01	12/10/19 17:28	7440-38-2		
Barium	<b>0.14</b>	mg/L	0.010	0.00049	1	12/09/19 15:01	12/10/19 17:28	7440-39-3		
Beryllium	<b>0.010</b>	mg/L	0.0030	0.000074	1	12/09/19 15:01	12/10/19 17:28	7440-41-7		
Boron	<b>0.68</b>	mg/L	0.040	0.0049	1	12/09/19 15:01	12/10/19 17:28	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	12/09/19 15:01	12/10/19 17:28	7440-43-9		
Calcium	<b>142</b>	mg/L	5.0	0.55	50	12/09/19 15:01	12/10/19 17:33	7440-70-2		
Chromium	<b>0.0073J</b>	mg/L	0.010	0.00039	1	12/09/19 15:01	12/10/19 17:28	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	12/09/19 15:01	12/10/19 17:28	7440-48-4		
Lead	<b>0.000053J</b>	mg/L	0.0050	0.000046	1	12/09/19 15:01	12/10/19 17:28	7439-92-1		
Lithium	<b>0.016J</b>	mg/L	0.030	0.00078	1	12/09/19 15:01	12/10/19 17:28	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	12/09/19 15:01	12/10/19 17:28	7439-98-7		
Selenium	<b>0.12</b>	mg/L	0.010	0.0013	1	12/09/19 15:01	12/10/19 17:28	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	12/09/19 15:01	12/10/19 17:28	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	12/10/19 17:58	12/11/19 12:20	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>11000</b>	mg/L	10.0	10.0	1		12/11/19 17:46			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>6100</b>	mg/L	500	12.0	500		12/11/19 15:03	16887-00-6		
Fluoride	<b>0.22J</b>	mg/L	0.30	0.029	1		12/11/19 09:05	16984-48-8		
Sulfate	<b>810</b>	mg/L	500	8.5	500		12/11/19 15:03	14808-79-8		

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: GA POWER PLANT MCMANUS CCR  
Pace Project No.: 2626485

Sample: <b>MCM-20</b>		Lab ID: <b>2626485003</b>		Collected: 12/04/19 16:10		Received: 12/06/19 09:35		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	12/09/19 15:01	12/10/19 17:39	7440-36-0		
Arsenic	<b>0.026</b>	mg/L	0.0050	0.00035	1	12/09/19 15:01	12/10/19 17:39	7440-38-2		
Barium	<b>0.14</b>	mg/L	0.010	0.00049	1	12/09/19 15:01	12/10/19 17:39	7440-39-3		
Beryllium	<b>0.011</b>	mg/L	0.0030	0.000074	1	12/09/19 15:01	12/10/19 17:39	7440-41-7		
Boron	<b>0.81</b>	mg/L	0.040	0.0049	1	12/09/19 15:01	12/10/19 17:39	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	12/09/19 15:01	12/10/19 17:39	7440-43-9		
Calcium	<b>140</b>	mg/L	5.0	0.55	50	12/09/19 15:01	12/10/19 17:45	7440-70-2		
Chromium	<b>0.0099J</b>	mg/L	0.010	0.00039	1	12/09/19 15:01	12/10/19 17:39	7440-47-3		
Cobalt	<b>0.022</b>	mg/L	0.0050	0.00030	1	12/09/19 15:01	12/10/19 17:39	7440-48-4		
Lead	<b>0.00045J</b>	mg/L	0.0050	0.000046	1	12/09/19 15:01	12/10/19 17:39	7439-92-1		
Lithium	<b>0.019J</b>	mg/L	0.030	0.00078	1	12/09/19 15:01	12/10/19 17:39	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	12/09/19 15:01	12/10/19 17:39	7439-98-7		
Selenium	<b>0.11</b>	mg/L	0.010	0.0013	1	12/09/19 15:01	12/10/19 17:39	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	12/09/19 15:01	12/10/19 17:39	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	12/10/19 17:58	12/11/19 12:23	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>13200</b>	mg/L	10.0	10.0	1		12/11/19 17:46			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>7410</b>	mg/L	500	12.0	500		12/11/19 15:25	16887-00-6		
Fluoride	<b>1.4</b>	mg/L	0.30	0.029	1		12/11/19 09:27	16984-48-8		
Sulfate	<b>1020</b>	mg/L	500	8.5	500		12/11/19 15:25	14808-79-8		

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### ANALYTICAL RESULTS

Project: GA POWER PLANT MCMANUS CCR  
Pace Project No.: 2626485

Sample: DUP-1		Lab ID: 2626485004		Collected: 12/04/19 00:00		Received: 12/06/19 09:35		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	12/09/19 15:01	12/10/19 17:56	7440-36-0	
Arsenic	<b>0.017</b>	mg/L	0.0050	0.00035	1	12/09/19 15:01	12/10/19 17:56	7440-38-2	
Barium	<b>0.14</b>	mg/L	0.010	0.00049	1	12/09/19 15:01	12/10/19 17:56	7440-39-3	
Beryllium	<b>0.011</b>	mg/L	0.0030	0.000074	1	12/09/19 15:01	12/10/19 17:56	7440-41-7	
Boron	<b>0.71</b>	mg/L	0.040	0.0049	1	12/09/19 15:01	12/10/19 17:56	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	12/09/19 15:01	12/10/19 17:56	7440-43-9	
Calcium	<b>148</b>	mg/L	5.0	0.55	50	12/09/19 15:01	12/10/19 17:51	7440-70-2	
Chromium	<b>0.0077J</b>	mg/L	0.010	0.00039	1	12/09/19 15:01	12/10/19 17:56	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	12/09/19 15:01	12/10/19 17:56	7440-48-4	
Lead	<b>0.000062J</b>	mg/L	0.0050	0.000046	1	12/09/19 15:01	12/10/19 17:56	7439-92-1	
Lithium	<b>0.017J</b>	mg/L	0.030	0.00078	1	12/09/19 15:01	12/10/19 17:56	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	12/09/19 15:01	12/10/19 17:56	7439-98-7	
Selenium	<b>0.13</b>	mg/L	0.010	0.0013	1	12/09/19 15:01	12/10/19 17:56	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	12/09/19 15:01	12/10/19 17:56	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	12/10/19 17:58	12/11/19 12:25	7439-97-6	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>11000</b>	mg/L	10.0	10.0	1		12/11/19 17:46		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>5700</b>	mg/L	500	12.0	500		12/11/19 15:47	16887-00-6	
Fluoride	<b>0.13J</b>	mg/L	0.30	0.029	1		12/11/19 09:49	16984-48-8	
Sulfate	<b>775</b>	mg/L	500	8.5	500		12/11/19 15:47	14808-79-8	

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### ANALYTICAL RESULTS

Project: GA POWER PLANT MCMANUS CCR  
Pace Project No.: 2626485

Sample: <b>FBL120519</b>		Lab ID: <b>2626485005</b>		Collected: 12/05/19 14:54	Received: 12/06/19 09:35	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual	
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	12/09/19 15:01	12/10/19 18:02	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00035	1	12/09/19 15:01	12/10/19 18:02	7440-38-2		
Barium	ND	mg/L	0.010	0.00049	1	12/09/19 15:01	12/10/19 18:02	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	12/09/19 15:01	12/10/19 18:02	7440-41-7		
Boron	ND	mg/L	0.040	0.0049	1	12/09/19 15:01	12/10/19 18:02	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	12/09/19 15:01	12/10/19 18:02	7440-43-9		
Calcium	<b>0.019J</b>	mg/L	0.10	0.011	1	12/09/19 15:01	12/10/19 18:02	7440-70-2		
Chromium	ND	mg/L	0.010	0.00039	1	12/09/19 15:01	12/10/19 18:02	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	12/09/19 15:01	12/10/19 18:02	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	12/09/19 15:01	12/10/19 18:02	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	12/09/19 15:01	12/10/19 18:02	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	12/09/19 15:01	12/10/19 18:02	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	12/09/19 15:01	12/10/19 18:02	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	12/09/19 15:01	12/10/19 18:02	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	12/10/19 17:58	12/11/19 12:27	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>12.0</b>	mg/L	10.0	10.0	1		12/11/19 17:47			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	ND	mg/L	1.0	0.024	1		12/11/19 06:53	16887-00-6		
Fluoride	ND	mg/L	0.30	0.029	1		12/11/19 06:53	16984-48-8		
Sulfate	ND	mg/L	1.0	0.017	1		12/11/19 06:53	14808-79-8		

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## ANALYTICAL RESULTS

Project: GA POWER PLANT MCMANUS CCR  
Pace Project No.: 2626485

Sample: EQBL120519		Lab ID: 2626485006		Collected: 12/05/19 14:58		Received: 12/06/19 09:35		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	12/09/19 15:01	12/10/19 18:08	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	12/09/19 15:01	12/10/19 18:08	7440-38-2	
Barium	ND	mg/L	0.010	0.00049	1	12/09/19 15:01	12/10/19 18:08	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	12/09/19 15:01	12/10/19 18:08	7440-41-7	
Boron	ND	mg/L	0.040	0.0049	1	12/09/19 15:01	12/10/19 18:08	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	12/09/19 15:01	12/10/19 18:08	7440-43-9	
Calcium	<b>0.037J</b>	mg/L	0.10	0.011	1	12/09/19 15:01	12/10/19 18:08	7440-70-2	
Chromium	<b>0.00060J</b>	mg/L	0.010	0.00039	1	12/09/19 15:01	12/10/19 18:08	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	12/09/19 15:01	12/10/19 18:08	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	12/09/19 15:01	12/10/19 18:08	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	12/09/19 15:01	12/10/19 18:08	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	12/09/19 15:01	12/10/19 18:08	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	12/09/19 15:01	12/10/19 18:08	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	12/09/19 15:01	12/10/19 18:08	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	12/10/19 17:58	12/11/19 12:30	7439-97-6	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>10.0</b>	mg/L	10.0	10.0	1		12/11/19 17:47		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>0.029J</b>	mg/L	1.0	0.024	1		12/11/19 07:15	16887-00-6	
Fluoride	ND	mg/L	0.30	0.029	1		12/11/19 07:15	16984-48-8	
Sulfate	ND	mg/L	1.0	0.017	1		12/11/19 07:15	14808-79-8	

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### QUALITY CONTROL DATA

Project: GA POWER PLANT MCMANUS CCR

Pace Project No.: 2626485

QC Batch: 40285 Analysis Method: EPA 7470A  
 QC Batch Method: EPA 7470A Analysis Description: 7470 Mercury  
 Associated Lab Samples: 2626485001, 2626485002, 2626485003, 2626485004, 2626485005, 2626485006

METHOD BLANK: 183097 Matrix: Water  
 Associated Lab Samples: 2626485001, 2626485002, 2626485003, 2626485004, 2626485005, 2626485006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	12/11/19 12:01	

LABORATORY CONTROL SAMPLE: 183098

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 183099 183100

Parameter	Units	2626485001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.0025	0.0025	0.0023	0.0023	93	93	75-125	0	20	

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### QUALITY CONTROL DATA

Project: GA POWER PLANT MCMANUS CCR  
Pace Project No.: 2626485

QC Batch: 40168 Analysis Method: EPA 6020B  
QC Batch Method: EPA 3005A Analysis Description: 6020B MET  
Associated Lab Samples: 2626485001, 2626485002, 2626485003, 2626485004, 2626485005, 2626485006

METHOD BLANK: 182552 Matrix: Water  
Associated Lab Samples: 2626485001, 2626485002, 2626485003, 2626485004, 2626485005, 2626485006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	12/10/19 16:24	
Arsenic	mg/L	ND	0.0050	0.00035	12/10/19 16:24	
Barium	mg/L	ND	0.010	0.00049	12/10/19 16:24	
Beryllium	mg/L	ND	0.0030	0.000074	12/10/19 16:24	
Boron	mg/L	ND	0.040	0.0049	12/10/19 16:24	
Cadmium	mg/L	ND	0.0025	0.00011	12/10/19 16:24	
Calcium	mg/L	ND	0.10	0.011	12/10/19 16:24	
Chromium	mg/L	ND	0.010	0.00039	12/10/19 16:24	
Cobalt	mg/L	ND	0.0050	0.00030	12/10/19 16:24	
Lead	mg/L	ND	0.0050	0.000046	12/10/19 16:24	
Lithium	mg/L	ND	0.030	0.00078	12/10/19 16:24	
Molybdenum	mg/L	ND	0.010	0.00095	12/10/19 16:24	
Selenium	mg/L	ND	0.010	0.0013	12/10/19 16:24	
Thallium	mg/L	ND	0.0010	0.000052	12/10/19 16:24	

LABORATORY CONTROL SAMPLE: 182553

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.10	104	80-120	
Arsenic	mg/L	0.1	0.096	96	80-120	
Barium	mg/L	0.1	0.10	101	80-120	
Beryllium	mg/L	0.1	0.097	97	80-120	
Boron	mg/L	1	1.0	100	80-120	
Cadmium	mg/L	0.1	0.098	98	80-120	
Calcium	mg/L	1	0.96	96	80-120	
Chromium	mg/L	0.1	0.098	98	80-120	
Cobalt	mg/L	0.1	0.095	95	80-120	
Lead	mg/L	0.1	0.099	99	80-120	
Lithium	mg/L	0.1	0.10	100	80-120	
Molybdenum	mg/L	0.1	0.10	102	80-120	
Selenium	mg/L	0.1	0.095	95	80-120	
Thallium	mg/L	0.1	0.099	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 182554 182555

Parameter	Units	2626485001 Result	MS		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MSD Spike Conc.								
Antimony	mg/L	ND	0.1	0.1	0.10	0.10	101	103	75-125	2	20	

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### QUALITY CONTROL DATA

Project: GA POWER PLANT MCMANUS CCR

Pace Project No.: 2626485

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 182554			182555			% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		2626485001	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec							
Arsenic	mg/L	0.0055	0.1	0.1	0.097	0.10	92	94	75-125	3	20			
Barium	mg/L	0.12	0.1	0.1	0.20	0.21	88	91	75-125	1	20			
Beryllium	mg/L	0.0045	0.1	0.1	0.084	0.089	79	84	75-125	6	20			
Boron	mg/L	0.23	1	1	0.98	1.0	75	82	75-125	6	20			
Cadmium	mg/L	ND	0.1	0.1	0.091	0.093	91	93	75-125	3	20			
Calcium	mg/L	40.5	1	1	39.8	40.9	-65	39	75-125	3	20	M6		
Chromium	mg/L	0.0046J	0.1	0.1	0.099	0.10	95	99	75-125	4	20			
Cobalt	mg/L	ND	0.1	0.1	0.090	0.096	90	96	75-125	6	20			
Lead	mg/L	ND	0.1	0.1	0.082	0.085	82	85	75-125	3	20			
Lithium	mg/L	0.0042J	0.1	0.1	0.089	0.095	85	91	75-125	7	20			
Molybdenum	mg/L	ND	0.1	0.1	0.097	0.10	96	100	75-125	3	20			
Selenium	mg/L	0.032	0.1	0.1	0.12	0.13	90	97	75-125	6	20			
Thallium	mg/L	ND	0.1	0.1	0.084	0.086	84	86	75-125	3	20			

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### QUALITY CONTROL DATA

Project: GA POWER PLANT MCMANUS CCR

Pace Project No.: 2626485

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QC Batch: 40338 Analysis Method: SM 2540C  
 QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids  
 Associated Lab Samples: 2626485001, 2626485002, 2626485003, 2626485004, 2626485005, 2626485006

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LABORATORY CONTROL SAMPLE: 183338

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	401	100	84-108	

---

SAMPLE DUPLICATE: 183339

Parameter	Units	2626485002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	11000	11000	0	10	

---

SAMPLE DUPLICATE: 183340

Parameter	Units	2626496001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	9910	10400	4	10	

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

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: GA POWER PLANT MCMANUS CCR

Pace Project No.: 2626485

QC Batch: 40294 Analysis Method: EPA 300.0  
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
 Associated Lab Samples: 2626485001, 2626485002, 2626485003, 2626485004, 2626485005, 2626485006

METHOD BLANK: 183133 Matrix: Water  
 Associated Lab Samples: 2626485001, 2626485002, 2626485003, 2626485004, 2626485005, 2626485006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.024	12/11/19 05:47	
Fluoride	mg/L	ND	0.30	0.029	12/11/19 05:47	
Sulfate	mg/L	ND	1.0	0.017	12/11/19 05:47	

LABORATORY CONTROL SAMPLE: 183134

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	92	90-110	
Fluoride	mg/L	5	4.7	95	90-110	
Sulfate	mg/L	5	4.8	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 183135 183136

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		2625930003 Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Chloride	mg/L	30.0	10	10	34.7	34.7	46	47	90-110	0	15	M1	
Fluoride	mg/L	0.80	10	10	8.4	8.9	76	81	90-110	6	15	M1	
Sulfate	mg/L	ND	10	10	ND	ND	0	0	90-110		15	M1	

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

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## QUALIFIERS

Project: GA POWER PLANT MCMANUS CCR

Pace Project No.: 2626485

---

### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

### LABORATORIES

PASI-GA Pace Analytical Services - Atlanta, GA

### ANALYTE QUALIFIERS

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

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

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: GA POWER PLANT MCMANUS CCR  
Pace Project No.: 2626485

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2626485001	MCM-18	EPA 3005A	40168	EPA 6020B	40183
2626485002	MCM-19	EPA 3005A	40168	EPA 6020B	40183
2626485003	MCM-20	EPA 3005A	40168	EPA 6020B	40183
2626485004	DUP-1	EPA 3005A	40168	EPA 6020B	40183
2626485005	FBL120519	EPA 3005A	40168	EPA 6020B	40183
2626485006	EQBL120519	EPA 3005A	40168	EPA 6020B	40183
2626485001	MCM-18	EPA 7470A	40285	EPA 7470A	40291
2626485002	MCM-19	EPA 7470A	40285	EPA 7470A	40291
2626485003	MCM-20	EPA 7470A	40285	EPA 7470A	40291
2626485004	DUP-1	EPA 7470A	40285	EPA 7470A	40291
2626485005	FBL120519	EPA 7470A	40285	EPA 7470A	40291
2626485006	EQBL120519	EPA 7470A	40285	EPA 7470A	40291
2626485001	MCM-18	SM 2540C	40338		
2626485002	MCM-19	SM 2540C	40338		
2626485003	MCM-20	SM 2540C	40338		
2626485004	DUP-1	SM 2540C	40338		
2626485005	FBL120519	SM 2540C	40338		
2626485006	EQBL120519	SM 2540C	40338		
2626485001	MCM-18	EPA 300.0	40294		
2626485002	MCM-19	EPA 300.0	40294		
2626485003	MCM-20	EPA 300.0	40294		
2626485004	DUP-1	EPA 300.0	40294		
2626485005	FBL120519	EPA 300.0	40294		
2626485006	EQBL120519	EPA 300.0	40294		

### REPORT OF LABORATORY ANALYSIS

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# CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A  
 Required Client Information:  
 Company: Georgia Power  
 Address: 2480 Manor Road  
 Atlanta, GA 30339  
 Email: jabraham@southernco.com  
 Phone: (404) 506-7239  
 Fax: (404) 506-7239  
 Requested Due Date:

Section B  
 Required Project Information:  
 Report To: Jui Abraham  
 Copy To: *[Handwritten]*  
 Purchase Order #: *[Handwritten]*  
 Project Name: Georgia Power - Plant Mcdonough CCR Scope  
 Project #: *[Handwritten]*

Section C  
 Invoice Information:  
 Attention:  
 Company Name:  
 Address:  
 POC Name:  
 POC Title:  
 POC Email:  
 POC Phone:  
 POC Fax:

ITEM #	SAMPLE ID <small>One Character per box. (A-Z, 0-9, -, ) Sample IDs must be unique</small>	MATRIX <small>DW Drinking Water WT Water WW Wastewater P Product S Solid SL Sulfide WP Wipe AR Air OT Other TS Tissue</small>	CODE <small>DW WT WW P S SL WP AR OT TS</small>	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives							Analyses Test			Residual Chlorine (Y/N)
						START DATE	END DATE			Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Radium 226/228	Metals (CCR App. III & App. TDS, Cl, F, SO4)	
1	NCCN-18								4								X	X	X	
2	NCCN-19								4								X	X	X	
3	NCCN-20								4								X	X	X	
4	Dug-1								4								X	X	X	
5	FD0A120519								4								X	X	X	
6	FD0A120519								4								X	X	X	
7																				
8																				
9																				
10																				
11																				
12																				

ADDITIONAL COMMENTS: *[Handwritten]*

RELINQUISHED BY / AFFILIATION: *[Handwritten]*

DATE: *[Handwritten]*

TIME: *[Handwritten]*

ACCEPTED BY / AFFILIATION: *[Handwritten]*

DATE: *[Handwritten]*

TIME: *[Handwritten]*

SAMPLER NAME AND SIGNATURE: *[Handwritten]*

PRINT NAME OF SAMPLER: *[Handwritten]*

SIGNATURE OF SAMPLER: *[Handwritten]*

DATE SIGNED: *[Handwritten]*

TEMP in C: *[Handwritten]*

Received on ice (Y/N): *[Handwritten]*

Custody Sealed Cooler (Y/N): *[Handwritten]*

Samples Intact (Y/N): *[Handwritten]*

W0#: 2626485

2626485



Client Name: \_\_\_\_\_

WO#: 2626485

PH: KH

Due Date: 12/13/19

CLIENT: GAPower-CCR

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Ot  
Tracking #: 7786 3959 6780

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

Packing Material:  Bubble Wrap  Bubble Bags  None  Other plastic bags

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

Cooler Temperature 0.8/5.4 Biological Tissue is Frozen: Yes No  
Temp should be above freezing to 6°C

Date and initials of person examining contents: \_\_\_\_\_

Comments: \_\_\_\_\_

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

Field Data Required? Y / N

Client Notification/ Resolution:

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

3000 W28

Project Manager Review: \_\_\_\_\_

Date: \_\_\_\_\_

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

January 06, 2020

Mr. Joju Abraham  
Georgia Power  
2480 Maner Road  
Atlanta, GA 30339

RE: Project: 2626485  
Pace Project No.: 30342110

Dear Mr. Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on December 12, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Jacquelyn Collins  
jacquelyn.collins@pacelabs.com  
(724)850-5612  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: 2626485  
Pace Project No.: 30342110

### **Pace Analytical Services Pennsylvania**

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

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 2626485  
Pace Project No.: 30342110

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2626485001	MCM-18	Water	12/05/19 16:00	12/12/19 09:30
2626485002	MCM-19	Water	12/04/19 14:56	12/12/19 09:30
2626485003	MCM-20	Water	12/04/19 16:10	12/12/19 09:30
2626485004	DUP-1	Water	12/04/19 00:01	12/12/19 09:30
2626485005	FBL120519	Water	12/05/19 14:54	12/12/19 09:30
2626485006	EQBL120519	Water	12/05/19 14:58	12/12/19 09:30

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 2626485  
Pace Project No.: 30342110

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2626485001	MCM-18	EPA 9315	JJY	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2626485002	MCM-19	EPA 9315	JJY	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2626485003	MCM-20	EPA 9315	JJY	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2626485004	DUP-1	EPA 9315	JJY	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2626485005	FBL120519	EPA 9315	JJY	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2626485006	EQBL120519	EPA 9315	JJY	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2626485  
Pace Project No.: 30342110

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 9315	<b>7.25 ± 1.41 (0.418)</b> C:95% T:NA	pCi/L	12/31/19 08:33	13982-63-3	
Radium-228		EPA 9320	<b>6.95 ± 1.59 (1.22)</b> C:66% T:85%	pCi/L	01/02/20 15:03	15262-20-1	
Total Radium		Total Radium Calculation	<b>14.2 ± 3.00 (1.64)</b>	pCi/L	01/03/20 10:58	7440-14-4	

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 9315	<b>6.58 ± 1.31 (0.378)</b> C:92% T:NA	pCi/L	12/31/19 08:33	13982-63-3	
Radium-228		EPA 9320	<b>12.0 ± 2.44 (1.17)</b> C:67% T:92%	pCi/L	01/02/20 15:03	15262-20-1	
Total Radium		Total Radium Calculation	<b>18.6 ± 3.75 (1.55)</b>	pCi/L	01/03/20 10:58	7440-14-4	

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 9315	<b>11.1 ± 1.96 (0.363)</b> C:100% T:NA	pCi/L	12/31/19 08:33	13982-63-3	
Radium-228		EPA 9320	<b>34.0 ± 6.35 (1.19)</b> C:67% T:87%	pCi/L	01/02/20 15:04	15262-20-1	
Total Radium		Total Radium Calculation	<b>45.1 ± 8.31 (1.55)</b>	pCi/L	01/03/20 10:58	7440-14-4	

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 9315	<b>6.67 ± 1.30 (0.390)</b> C:101% T:NA	pCi/L	12/31/19 08:33	13982-63-3	
Radium-228		EPA 9320	<b>13.1 ± 2.64 (1.06)</b> C:66% T:89%	pCi/L	01/02/20 15:04	15262-20-1	
Total Radium		Total Radium Calculation	<b>19.8 ± 3.94 (1.45)</b>	pCi/L	01/03/20 10:58	7440-14-4	

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 9315	<b>0.530 ± 0.275 (0.295)</b> C:98% T:NA	pCi/L	12/31/19 08:33	13982-63-3	
Radium-228		EPA 9320	<b>0.917 ± 0.590 (1.12)</b> C:65% T:92%	pCi/L	01/02/20 15:04	15262-20-1	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2626485  
Pace Project No.: 30342110

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	<b>1.45 ± 0.865 (1.42)</b>	pCi/L	01/03/20 10:58	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.328 ± 0.224 (0.302)</b> C:91% T:NA	pCi/L	12/31/19 08:34	13982-63-3	
Radium-228	EPA 9320	<b>0.705 ± 0.716 (1.49)</b> C:66% T:76%	pCi/L	01/02/20 15:04	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.03 ± 0.940 (1.79)</b>	pCi/L	01/03/20 10:58	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: 2626485  
Pace Project No.: 30342110

### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

### LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

## REPORT OF LABORATORY ANALYSIS

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# Chain of Custody

Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: GA

Cert. Needed:  Yes  No

Owner Received Date: 12/6/2019 Results Requested By: 12/13/2019

Workorder: 2626485 Workorder Name: GA POWER PLANT MCMANUS CCR

Subcontract To:

Kevin Herring  
Pace Analytical Charlotte  
9800 Kinney Ave.  
Suite 100  
Huntersville, NC 28078  
Phone (704)875-9092

Pace Analytical Pittsburgh  
1638 Roseytown Road  
Suites 2,3, & 4  
Greensburg, PA 15601  
Phone (724)850-5600



WO#: 30342110



30342110

Preserved Containers

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	NOH	9315	9320	LAB USE ONLY
1	MCM-18	PS	12/5/2019 16:00	2626485001	Water	1	X	X	
2	MCM-19	PS	12/4/2019 14:56	2626485002	Water	1	X	X	
3	MCM-20	PS	12/4/2019 16:10	2626485003	Water	1	X	X	
4	DUP-1	PS	12/4/2019 00:00	2626485004	Water	1	X	X	
5	FBL120519	PS	12/5/2019 14:54	2626485005	Water	1	X	X	
6	EQBL120519	PS	12/5/2019 14:58	2626485006	Water	1	X	X	

Transfers	Released By	Date/Time	Received By	Date/Time	Received on Ice (Y) or N	Samples Intact Y or N
1		12.11.19	<i>B. Umberger</i>	12/12/19 0930		
2						
3						

Cooler Temperature on Receipt  $\Delta$  Le °C Custody Seal (Y) or N Received on Ice (Y) or N Samples Intact Y or N

\*\*\*In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

# Chain of Custody

# 30342190



Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: GA  
 Cert. Needed:  Yes  No

Workorder: 2626485    Workorder Name: GA POWER PLANT MCMANUS CCR    Owner Received Date: 12/6/2019    Results Requested By: 12/13/2019

Report To: Subcontract To: Requested Analysis

Kevin Herring  
 Pace Analytical Charlotte  
 9800 Kincey Ave.  
 Suite 100  
 Huntersville, NC 28078  
 Phone (704)875-9092

Pace Analytical Pittsburgh  
 1638 Roseytown Road  
 Suites 2,3, & 4  
 Greensburg, PA 15601  
 Phone (724)850-5600

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers		LAB USE ONLY
						3	NH	
1	MCM-18	PS	12/5/2019 16:00	2626485001	Water	1		
2	MCM-19	PS	12/4/2019 14:56	2626485002	Water	1		
3	MCM-20	PS	12/4/2019 16:10	2626485003	Water	1		
4	DUP-1	PS	12/4/2019 00:00	2626485004	Water	1		
5	FBL120519	PS	12/5/2019 14:54	2626485005	Water	1		
6	EQBL120519	PS	12/5/2019 14:58	2626485006	Water	1		

Subbed work within PASTI RAD

Transfers	Released By	Date/Time	Received By	Date/Time	Received on Ice	Y or N	Custody Seal	Y or N	Samples Intact	Y or N
1	<i>[Signature]</i>	12/6/2019	<i>[Signature]</i>	12/01/2019		N			Y	N
2										
3										

Comments

Cooler Temperature on Receipt      °C    Received on Ice Y or N    Custody Seal Y or N    Samples Intact Y or N

\*\*\*In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pittsburgh Lab Sample Condition Upon Receipt

# 30342110



Client Name: Pace Analytical Charlotte

Project # \_\_\_\_\_

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Other \_\_\_\_\_

Tracking #: 1069 9309 7429

Label _____
LIMS Login _____

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

Thermometer Used 10 Type of Ice: Wet Blue None

Cooler Temperature Observed Temp 2.6 °C Correction Factor: 0 °C Final Temp: 2.6 °C

Temp should be above freezing to 6°C

Comments:	pH paper Lot#			Date and initials of person examining contents: <u>BA 12-13-19</u>
	Yes	No	N/A	
Chain of Custody Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.
Sampler Name & Signature on COC: <u>BA 12/13/19</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.
Sample Labels match COC: -Includes date/time/ID Matrix: <u>WT</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.
Short Hold Time Analysis (<72hr remaining):	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.
Rush Turn Around Time Requested:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.
Sufficient Volume:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9. See Comments below
Correct Containers Used: -Pace Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.
Containers Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11.
Orthophosphate field filtered	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12.
Hex Cr Aqueous sample field filtered	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	13.
Organic Samples checked for dechlorination:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	14.
Filtered volume received for Dissolved tests All containers have been checked for preservation.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15.
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	16. <u>PHL2</u>
All containers meet method preservation requirements.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Initial when completed: <u>BA</u> Date/time of preservation: _____
				Lot # of added preservative: _____
Headspace in VOA Vials (>6mm):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	17.
Trip Blank Present:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	18.
Trip Blank Custody Seals Present	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Rad Samples Screened < 0.5 mrem/hr	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Initial when completed: <u>BA</u> Date: <u>12-13-19</u>

Client Notification/ Resolution:

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Contacted By: \_\_\_\_\_

Comments/ Resolution: Received sample MCM-18 volume is a little over 50ml. Received 1 full BPIW for the other samples.

A check in this box indicates that additional information has been stored in ereports.

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

\*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Pittsburgh Lab Sample Condition Upon Receipt



Client Name: Pace GA

Project # 30342110

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Other \_\_\_\_\_

Tracking #: 1069 9309 5780

Label _____
LIMS Login _____

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

Thermometer Used 9 Type of Ice: Wet Blue None melting

Cooler Temperature Observed Temp 11.8 °C Correction Factor: 0 °C Final Temp: 11.8 °C

Temp should be above freezing to 6°C

Comments:	pH paper Lot#			Date and Initials of person examining contents: <u>12/10/15 JVD</u>
	Yes	No	N/A	
Chain of Custody Present:	/			1.
Chain of Custody Filled Out:	/			2.
Chain of Custody Relinquished:	/			3.
Sampler Name & Signature on COC:	/			4.
Sample Labels match COC:	/			5.
-Includes date/time/ID Matrix: <u>WT</u>				
Samples Arrived within Hold Time:	/			6.
Short Hold Time Analysis (<72hr remaining):		/		7.
Rush Turn Around Time Requested:		/		8.
Sufficient Volume:	/			9.
Correct Containers Used:	/			10.
-Pace Containers Used:	/			
Containers Intact:	/			11.
Orthophosphate field filtered			/	12.
Hex Cr Aqueous sample field filtered			/	13.
Organic Samples checked for dechlorination:			/	14.
Filtered volume received for Dissolved tests			/	15.
All containers have been checked for preservation.	/			16.
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix				<u>PH12</u>
All containers meet method preservation requirements.	/			Initial when completed: <u>JVB</u> Date/time of preservation: _____
				Lot # of added preservative: _____
Headspace in VOA Vials (>6mm):			/	17.
Trip Blank Present:		/		18.
Trip Blank Custody Seals Present		/		
Rad Samples Screened < 0.5 mrem/hr	/			Initial when completed: <u>JVD</u> Date: <u>12/10/15</u>

Client Notification/ Resolution:

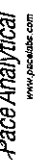
Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Contacted By: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office ( i.e. out of hold, incorrect preservative, out of temp, incorrect containers)  
 \*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

# Quality Control Sample Performance Assessment



Analyst Must Manually Enter All Fields Highlighted in Yellow.

Test: Ra-226  
Analyst: JJY  
Date: 12/30/2019  
Worklist: 51601  
Matrix: DW

Method Blank Assessment	
MB Sample ID	1628861
MB Concentration:	0.249
M/B Counting Uncertainty:	0.213
MB MDC:	0.370
MB Numerical Performance Indicator:	2.29
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment		LCS/D (Y or N)?	N
Count Date:		12/30/2019	LCS/D51601
Spike I.D.:		19-033	
Decay Corrected Spike Concentration (pCi/mL):		24.052	
Volume Used (mL):		0.10	
Aliquot Volume (L, g, F):		0.509	
Target Conc. (pCi/L, g, F):		4.729	
Uncertainty (Calculated):		0.057	
Result (pCi/L, g, F):		4.697	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):		0.362	
Numerical Performance Indicator:		-0.17	
Percent Recovery:		99.32%	
Status vs Numerical Indicator:		N/A	
Status vs Recovery:		Pass	
Upper % Recovery Limits:		125%	
Lower % Recovery Limits:		75%	

Duplicate Sample Assessment	
Sample I.D.:	2626485005
Duplicate Sample I.D.:	2626485005DUP
Sample Result (pCi/L, g, F):	0.530
Sample Result Counting Uncertainty (pCi/L, g, F):	0.265
Sample Duplicate Result (pCi/L, g, F):	0.387
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.250
Are sample and/or duplicate results below RL?	
Duplicate Numerical Performance Indicator:	0.773
Duplicate RPD:	31.30%
Duplicate Status vs Numerical Indicator:	N/A
Duplicate Status vs RPD:	Fail***
% RPD Limit:	25%

\*\*\* Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

\*\*\*Batch must be re-assessed due to unacceptable precision\*\*\* N/A LAM 12/31/19

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date: Sample I.D. Sample MS I.D. Sample MSD I.D. Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL): Spike Volume Used in MS (mL): Spike Volume Used in MSD (mL): MS Aliquot (L, g, F): MS Target Conc. (pCi/L, g, F): MSD Aliquot (L, g, F): MSD Target Conc. (pCi/L, g, F): MS Spike Uncertainty (calculated): MSD Spike Uncertainty (calculated):		
Sample Result: Sample Result Counting Uncertainty (pCi/L, g, F): Sample Matrix Spike Result: Matrix Spike Result Counting Uncertainty (pCi/L, g, F): Sample Matrix Spike Duplicate Result: Sample Matrix Spike Duplicate Counting Uncertainty (pCi/L, g, F): MS Numerical Performance Indicator: MSD Numerical Performance Indicator: MS Percent Recovery: MSD Percent Recovery: MS Status vs Numerical Indicator: MSD Status vs Numerical Indicator: MS Status vs Recovery: MSD Status vs Recovery: MS/MSD Upper % Recovery Limits: MS/MSD Lower % Recovery Limits:		

Matrix Spike/Matrix Spike Duplicate Sample Assessment
Sample I.D. Sample MS I.D. Sample MSD I.D. Sample Matrix Spike Result: Matrix Spike Result Counting Uncertainty (pCi/L, g, F): Sample Matrix Spike Duplicate Result: Sample Matrix Spike Duplicate Counting Uncertainty (pCi/L, g, F): Duplicate Numerical Performance Indicator: (Based on the Percent Recoveries) MS/MSD Duplicate RPD: MS/MSD Duplicate Status vs Numerical Indicator: MS/MSD Duplicate Status vs RPD: % RPD Limit:

LAM 12/31/19

# Quality Control Sample Performance Assessment



*Analyst Must Manually Enter All Fields Highlighted in Yellow.*

Test: Ra-226  
 Analyst: JULY  
 Date: 12/30/2019  
 Worklist: 51601  
 Matrix: DW

Method Blank Assessment	
MB Sample ID	1828861
MB concentration:	0.249
M/B Counting Uncertainty:	0.213
MB MDC:	0.370
MB Numerical Performance Indicator:	2.29
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCS (Y or N)?	
	LCS51601	LCS51601
Count Date:	12/30/2019	12/30/2019
Spike I.D.:	19-033	19-033
Decay Corrected Spike Concentration (pCi/mL):	24.052	24.052
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.509	0.509
Target Conc. (pCi/L, g, F):	4.729	4.729
Uncertainty (Calculated):	0.057	0.057
Result (pCi/L, g, F):	4.697	4.955
Numerical Performance Indicator:	0.362	0.380
Percent Recovery:	99.32%	103.75%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	125%	125%
Lower % Recovery Limits:	75%	75%

Duplicate Sample Assessment	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Sample I.D.:	LCS51601
Duplicate Sample I.D.:	LCS51601
Sample Result (pCi/L, g, F):	4.697
Sample Result Counting Uncertainty (pCi/L, g, F):	0.362
Sample Duplicate Result (pCi/L, g, F):	4.955
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.380
Are sample and/or duplicate results below RL?	NO
Duplicate Numerical Performance Indicator:	-0.966
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	4.36%
Duplicate Status vs Numerical Indicator:	N/A
Duplicate Status vs RPD:	Pass
% RPD Limit:	25%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.:		
Sample MS I.D.:		
Sample MSD I.D.:		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
MS Aliquot (L, g, F):		
MS Target Conc. (pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Matrix Spike/Matrix Spike Duplicate Sample Assessment
Sample I.D.:
Sample MS I.D.:
Sample MSD I.D.:
Sample Matrix Spike Result:
Sample Matrix Spike Duplicate Result:
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):
Duplicate Numerical Performance Indicator:
(Based on the Percent Recoveries) MS/MSD Duplicate RPD:
MS/MSD Duplicate Status vs Numerical Indicator:
MS/MSD Duplicate Status vs RPD:
% RPD Limit:

## Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

AM 12/31/19



# Quality Control Sample Performance Assessment

Analyst **Must Manually Enter All Fields Highlighted in Yellow.**

Test: Ra-228  
Analyst: VAL  
Date: 12/30/2019  
Worklist: 51607  
Matrix: WT



Method Blank Assessment	
MB Sample ID	1828905
MB concentration:	0.606
MB 2 Sigma CSU:	0.407
MB MDC:	0.774
MB Numerical Performance Indicator:	Warning
MB Status vs. Numerical Indicator:	Pass
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCS/D (Y or N)?	
	LCS51607	YCS51607
Count Date:	1/2/2020	1/2/2020
Spike I.D.:	19-057	19-057
Decay Corrected Spike Concentration (pCi/mL):	35.684	35.684
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.815	0.808
Target Conc. (pCi/L, g, F):	4.391	4.418
Uncertainty (Calculated):	0.315	0.318
Result (pCi/L, g, F):	3.941	4.004
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	0.988	0.961
Numerical Performance Indicator:	-0.83	-0.80
Percent Recovery:	89.96%	90.63%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Duplicate Sample Assessment	Matrix Spike/Matrix Spike Duplicate Sample Assessment
Sample I.D.:	Sample I.D.:
Duplicate Sample I.D.:	Sample MS I.D.:
Sample Result (pCi/L, g, F):	Sample MSD I.D.:
Sample Result 2 Sigma CSU (pCi/L, g, F):	Sample Matrix Spike Result:
Sample Duplicate Result (pCi/L, g, F):	Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	Sample Matrix Spike Duplicate Result:
Are sample and/or duplicate results below RL?	Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):
Duplicate Numerical Performance Indicator:	Duplicate Numerical Performance Indicator:
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:
Duplicate Status vs Numerical Indicator:	MS/ MSD Duplicate Status vs RPD:
Duplicate Status vs RPD:	% RPD Limit:
% RPD Limit:	% RPD Limit:

## Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

*Am 1/3/20*

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	12/10/2019	
Sample I.D.:	30340726001	
Sample MS I.D.:	30340726001MS	
Sample MSD I.D.:		
Spike I.D.:	19-057	
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	35.959	
Spike Volume Used in MS (mL):	0.20	
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):	0.813	
MS Target Conc. (pCi/L, g, F):	8.844	
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (Calculated):	0.637	
MSD Spike Uncertainty (Calculated):		
Sample Result:	0.663	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.363	
Sample Matrix Spike Result:	9.971	
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):	2.027	
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):	0.422	
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:	105.25%	
MS Percent Recovery:	Pass	
MSD Percent Recovery:	Pass	
MS Status vs Numerical Indicator:	135%	
MSD Status vs Numerical Indicator:	60%	
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

January 17, 2020

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

RE: Project: GEORGIA POWER PLANT MCMANUS  
Pace Project No.: 2627109

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on December 19, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



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

Enclosures

cc: Lea Millet, Resolute Environmental & Water Resources  
Lauren Petty, Southern Company Services, Inc.  
Kevin Stephenson, Resolute Environmental & Water  
Resources Consulting, LLC  
Rebecca Thornton, Pace Analytical Atlanta  
Stephen Wilson, Resolute Environmental & Water  
Resources Consulting, LLC



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: GEORGIA POWER PLANT MCMANUS  
Pace Project No.: 2627109

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### Pace Analytical Services Atlanta

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

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

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### Pace Analytical Services Pennsylvania

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

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

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: GEORGIA POWER PLANT MCMANUS  
Pace Project No.: 2627109

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2627109001	MCM-18	Water	12/18/19 09:12	12/19/19 11:35
2627109002	MCM-19	Water	12/17/19 07:54	12/19/19 11:35
2627109003	MCM-20	Water	12/18/19 08:04	12/19/19 11:35
2627109004	DUP-1	Water	12/17/19 00:00	12/19/19 11:35
2627109005	FBL121719	Water	12/17/19 09:10	12/19/19 11:35
2627109006	EQBL121719	Water	12/17/19 09:14	12/19/19 11:35

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: GEORGIA POWER PLANT MCMANUS

Pace Project No.: 2627109

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2627109001	MCM-18	EPA 6010D	KLH	2	PASI-GA
		EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 9315	JJY	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	ALW	1	PASI-GA
2627109002	MCM-19	EPA 300.0	MWB	3	PASI-GA
		EPA 6010D	KLH	2	PASI-GA
		EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 9315	JJY	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2627109003	MCM-20	SM 2540C	ALW	1	PASI-GA
		EPA 300.0	MWB	3	PASI-GA
		EPA 6010D	KLH	2	PASI-GA
		EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 9315	JJY	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
2627109004	DUP-1	Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	ALW	1	PASI-GA
		EPA 300.0	MWB	3	PASI-GA
		EPA 6010D	KLH	2	PASI-GA
		EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 9315	JJY	1	PASI-PA
2627109005	FBL121719	EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	ALW	1	PASI-GA
		EPA 300.0	MWB	3	PASI-GA
		EPA 6010D	KLH	2	PASI-GA
		EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA

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**SAMPLE ANALYTE COUNT**

Project: GEORGIA POWER PLANT MCMANUS

Pace Project No.: 2627109

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2627109006	EQBL121719	Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	ALW	1	PASI-GA
		EPA 300.0	MWB	3	PASI-GA
		EPA 6010D	KLH	2	PASI-GA
		EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 9315	JJY	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	ALW	1	PASI-GA
		EPA 300.0	MWB	3	PASI-GA

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### ANALYTICAL RESULTS

Project: GEORGIA POWER PLANT MCMANUS  
Pace Project No.: 2627109

Sample: MCM-18		Lab ID: 2627109001		Collected: 12/18/19 09:12		Received: 12/19/19 11:35		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6010D MET ICP</b>		Analytical Method: EPA 6010D Preparation Method: EPA 3010A								
Barium	0.11	mg/L	0.010	0.0062	1	12/31/19 10:03	12/31/19 17:52	7440-39-3		
Calcium	42.0	mg/L	0.50	0.14	1	12/31/19 10:03	12/31/19 17:52	7440-70-2		
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	12/23/19 19:54	12/24/19 19:52	7440-36-0		
Arsenic	0.0031J	mg/L	0.0050	0.00035	1	12/23/19 19:54	12/24/19 19:52	7440-38-2	B	
Beryllium	0.0048	mg/L	0.0030	0.000074	1	12/23/19 19:54	12/24/19 19:52	7440-41-7		
Boron	0.23	mg/L	0.040	0.0049	1	12/23/19 19:54	12/24/19 19:52	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	12/23/19 19:54	12/24/19 19:52	7440-43-9		
Chromium	0.0045J	mg/L	0.010	0.00039	1	12/23/19 19:54	12/24/19 19:52	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	12/23/19 19:54	12/24/19 19:52	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	12/23/19 19:54	12/24/19 19:52	7439-92-1		
Lithium	0.0045J	mg/L	0.030	0.00078	1	12/23/19 19:54	12/24/19 19:52	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	12/23/19 19:54	12/24/19 19:52	7439-98-7		
Selenium	0.010	mg/L	0.010	0.0013	1	12/23/19 19:54	12/24/19 19:52	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	12/23/19 19:54	12/24/19 19:52	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	12/23/19 17:58	12/24/19 10:09	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	3880	mg/L	10.0	10.0	1		12/20/19 16:51			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	2090	mg/L	250	6.0	250		01/08/20 15:16	16887-00-6	M6	
Fluoride	0.33	mg/L	0.30	0.029	1		01/08/20 11:35	16984-48-8		
Sulfate	274	mg/L	50.0	0.85	50		01/08/20 00:11	14808-79-8		

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### ANALYTICAL RESULTS

Project: GEORGIA POWER PLANT MCMANUS  
Pace Project No.: 2627109

Sample: MCM-19		Lab ID: 2627109002		Collected: 12/17/19 07:54		Received: 12/19/19 11:35		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010D MET ICP</b>		Analytical Method: EPA 6010D Preparation Method: EPA 3010A							
Barium	<b>0.14</b>	mg/L	0.010	0.0062	1	12/31/19 10:03	12/31/19 17:57	7440-39-3	
Calcium	<b>136</b>	mg/L	5.0	1.4	10	12/31/19 10:03	01/02/20 18:07	7440-70-2	
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.015	0.0014	5	12/23/19 19:54	12/26/19 18:59	7440-36-0	D3
Arsenic	<b>0.011J</b>	mg/L	0.025	0.0018	5	12/23/19 19:54	12/26/19 18:59	7440-38-2	B,D3
Beryllium	<b>0.012</b>	mg/L	0.0030	0.000074	1	12/23/19 19:54	12/24/19 20:15	7440-41-7	
Boron	<b>0.57</b>	mg/L	0.040	0.0049	1	12/23/19 19:54	12/24/19 20:15	7440-42-8	
Cadmium	ND	mg/L	0.012	0.00057	5	12/23/19 19:54	12/26/19 18:59	7440-43-9	D3
Chromium	<b>0.0090J</b>	mg/L	0.050	0.0020	5	12/23/19 19:54	12/26/19 18:59	7440-47-3	D3
Cobalt	ND	mg/L	0.025	0.0015	5	12/23/19 19:54	12/26/19 18:59	7440-48-4	D3
Lead	ND	mg/L	0.0050	0.000046	1	12/23/19 19:54	12/24/19 20:15	7439-92-1	
Lithium	<b>0.018J</b>	mg/L	0.030	0.00078	1	12/23/19 19:54	12/24/19 20:15	7439-93-2	
Molybdenum	ND	mg/L	0.050	0.0047	5	12/23/19 19:54	12/26/19 18:59	7439-98-7	D3
Selenium	<b>0.031J</b>	mg/L	0.050	0.0063	5	12/23/19 19:54	12/26/19 18:59	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	12/23/19 19:54	12/24/19 20:15	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	12/23/19 17:58	12/24/19 10:11	7439-97-6	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>9860</b>	mg/L	10.0	10.0	1		12/20/19 16:51		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>5660</b>	mg/L	500	12.0	500		01/08/20 16:45	16887-00-6	
Fluoride	ND	mg/L	0.30	0.029	1		01/08/20 11:57	16984-48-8	M6
Sulfate	<b>535</b>	mg/L	100	1.7	100		01/08/20 01:17	14808-79-8	

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## ANALYTICAL RESULTS

Project: GEORGIA POWER PLANT MCMANUS  
Pace Project No.: 2627109

Sample: MCM-20		Lab ID: 2627109003		Collected: 12/18/19 08:04		Received: 12/19/19 11:35		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010D MET ICP</b>		Analytical Method: EPA 6010D Preparation Method: EPA 3010A							
Barium	<b>0.15</b>	mg/L	0.010	0.0062	1	12/31/19 10:03	12/31/19 18:02	7440-39-3	
Calcium	<b>145</b>	mg/L	5.0	1.4	10	12/31/19 10:03	01/02/20 18:12	7440-70-2	
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.015	0.0014	5	12/23/19 19:54	12/26/19 19:05	7440-36-0	D3
Arsenic	<b>0.019J</b>	mg/L	0.025	0.0018	5	12/23/19 19:54	12/26/19 19:05	7440-38-2	B,D3
Beryllium	<b>0.012</b>	mg/L	0.0030	0.000074	1	12/23/19 19:54	12/24/19 20:26	7440-41-7	
Boron	<b>0.77</b>	mg/L	0.040	0.0049	1	12/23/19 19:54	12/24/19 20:26	7440-42-8	
Cadmium	ND	mg/L	0.012	0.00057	5	12/23/19 19:54	12/26/19 19:05	7440-43-9	D3
Chromium	<b>0.011J</b>	mg/L	0.050	0.0020	5	12/23/19 19:54	12/26/19 19:05	7440-47-3	D3
Cobalt	<b>0.031</b>	mg/L	0.025	0.0015	5	12/23/19 19:54	12/26/19 19:05	7440-48-4	
Lead	<b>0.00023J</b>	mg/L	0.0050	0.000046	1	12/23/19 19:54	12/24/19 20:26	7439-92-1	
Lithium	<b>0.020J</b>	mg/L	0.030	0.00078	1	12/23/19 19:54	12/24/19 20:26	7439-93-2	
Molybdenum	ND	mg/L	0.050	0.0047	5	12/23/19 19:54	12/26/19 19:05	7439-98-7	D3
Selenium	<b>0.032J</b>	mg/L	0.050	0.0063	5	12/23/19 19:54	12/26/19 19:05	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	12/23/19 19:54	12/24/19 20:26	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	12/23/19 17:58	12/24/19 10:14	7439-97-6	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>12500</b>	mg/L	10.0	10.0	1		12/20/19 16:51		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>7170</b>	mg/L	500	12.0	500		01/08/20 16:01	16887-00-6	
Fluoride	<b>1.5</b>	mg/L	0.30	0.029	1		01/08/20 12:19	16984-48-8	
Sulfate	<b>444J</b>	mg/L	500	8.5	500		01/08/20 16:01	14808-79-8	

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### ANALYTICAL RESULTS

Project: GEORGIA POWER PLANT MCMANUS  
Pace Project No.: 2627109

Sample: DUP-1		Lab ID: 2627109004		Collected: 12/17/19 00:00		Received: 12/19/19 11:35		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6010D MET ICP</b>		Analytical Method: EPA 6010D Preparation Method: EPA 3010A								
Barium	<b>0.13</b>	mg/L	0.010	0.0062	1	12/31/19 10:03	12/31/19 18:06	7440-39-3		
Calcium	<b>139</b>	mg/L	5.0	1.4	10	12/31/19 10:03	01/02/20 18:16	7440-70-2		
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.015	0.0014	5	12/23/19 19:54	12/26/19 19:11	7440-36-0	D3	
Arsenic	<b>0.011J</b>	mg/L	0.025	0.0018	5	12/23/19 19:54	12/26/19 19:11	7440-38-2	B,D3	
Beryllium	<b>0.013</b>	mg/L	0.0030	0.000074	1	12/23/19 19:54	12/24/19 20:38	7440-41-7		
Boron	<b>0.65</b>	mg/L	0.040	0.0049	1	12/23/19 19:54	12/24/19 20:38	7440-42-8		
Cadmium	ND	mg/L	0.012	0.00057	5	12/23/19 19:54	12/26/19 19:11	7440-43-9	D3	
Chromium	<b>0.0099J</b>	mg/L	0.050	0.0020	5	12/23/19 19:54	12/26/19 19:11	7440-47-3	D3	
Cobalt	ND	mg/L	0.025	0.0015	5	12/23/19 19:54	12/26/19 19:11	7440-48-4	D3	
Lead	ND	mg/L	0.0050	0.000046	1	12/23/19 19:54	12/24/19 20:38	7439-92-1		
Lithium	<b>0.019J</b>	mg/L	0.030	0.00078	1	12/23/19 19:54	12/24/19 20:38	7439-93-2		
Molybdenum	ND	mg/L	0.050	0.0047	5	12/23/19 19:54	12/26/19 19:11	7439-98-7	D3	
Selenium	<b>0.040J</b>	mg/L	0.050	0.0063	5	12/23/19 19:54	12/26/19 19:11	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	12/23/19 19:54	12/24/19 20:38	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	12/23/19 17:58	12/24/19 10:16	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>9760</b>	mg/L	10.0	10.0	1		12/20/19 16:51			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>5680</b>	mg/L	500	12.0	500		01/08/20 16:23	16887-00-6		
Fluoride	ND	mg/L	0.30	0.029	1		01/08/20 12:41	16984-48-8		
Sulfate	<b>6.1</b>	mg/L	1.0	0.017	1		01/08/20 12:41	14808-79-8		

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## ANALYTICAL RESULTS

Project: GEORGIA POWER PLANT MCMANUS  
Pace Project No.: 2627109

Sample: <b>FBL121719</b>		Lab ID: <b>2627109005</b>		Collected: 12/17/19 09:10	Received: 12/19/19 11:35	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual	
<b>6010D MET ICP</b>		Analytical Method: EPA 6010D Preparation Method: EPA 3010A								
Barium	ND	mg/L	0.010	0.0062	1	12/31/19 10:03	12/31/19 18:11	7440-39-3		
Calcium	ND	mg/L	0.50	0.14	1	12/31/19 10:03	12/31/19 18:11	7440-70-2		
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	12/23/19 19:54	12/24/19 20:55	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00035	1	12/23/19 19:54	12/24/19 20:55	7440-38-2		
Beryllium	ND	mg/L	0.0030	0.000074	1	12/23/19 19:54	12/24/19 20:55	7440-41-7		
Boron	ND	mg/L	0.040	0.0049	1	12/23/19 19:54	12/24/19 20:55	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	12/23/19 19:54	12/24/19 20:55	7440-43-9		
Chromium	ND	mg/L	0.010	0.00039	1	12/23/19 19:54	12/24/19 20:55	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	12/23/19 19:54	12/24/19 20:55	7440-48-4		
Lead	<b>0.000088J</b>	mg/L	0.0050	0.000046	1	12/23/19 19:54	12/24/19 20:55	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	12/23/19 19:54	12/24/19 20:55	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	12/23/19 19:54	12/24/19 20:55	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	12/23/19 19:54	12/24/19 20:55	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	12/23/19 19:54	12/24/19 20:55	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	12/23/19 17:58	12/24/19 10:19	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>27.0</b>	mg/L	10.0	10.0	1		12/20/19 16:51			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	ND	mg/L	1.0	0.024	1		01/08/20 02:23	16887-00-6		
Fluoride	ND	mg/L	0.30	0.029	1		01/08/20 02:23	16984-48-8		
Sulfate	ND	mg/L	1.0	0.017	1		01/08/20 02:23	14808-79-8		

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### ANALYTICAL RESULTS

Project: GEORGIA POWER PLANT MCMANUS  
Pace Project No.: 2627109

Sample: EQBL121719		Lab ID: 2627109006		Collected: 12/17/19 09:14		Received: 12/19/19 11:35		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010D MET ICP</b>		Analytical Method: EPA 6010D Preparation Method: EPA 3010A							
Barium	ND	mg/L	0.010	0.0062	1	12/31/19 10:03	12/31/19 18:16	7440-39-3	
Calcium	ND	mg/L	0.50	0.14	1	12/31/19 10:03	12/31/19 18:16	7440-70-2	
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	12/23/19 19:54	12/24/19 21:00	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	12/23/19 19:54	12/24/19 21:00	7440-38-2	
Beryllium	ND	mg/L	0.0030	0.000074	1	12/23/19 19:54	12/24/19 21:00	7440-41-7	
Boron	ND	mg/L	0.040	0.0049	1	12/23/19 19:54	12/24/19 21:00	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	12/23/19 19:54	12/24/19 21:00	7440-43-9	
Chromium	ND	mg/L	0.010	0.00039	1	12/23/19 19:54	12/24/19 21:00	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	12/23/19 19:54	12/24/19 21:00	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	12/23/19 19:54	12/24/19 21:00	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	12/23/19 19:54	12/24/19 21:00	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	12/23/19 19:54	12/24/19 21:00	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	12/23/19 19:54	12/24/19 21:00	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	12/23/19 19:54	12/24/19 21:00	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	12/23/19 17:58	12/24/19 10:21	7439-97-6	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>16.0</b>	mg/L	10.0	10.0	1		12/20/19 16:51		D6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	ND	mg/L	1.0	0.024	1		01/08/20 02:45	16887-00-6	
Fluoride	ND	mg/L	0.30	0.029	1		01/08/20 02:45	16984-48-8	
Sulfate	ND	mg/L	1.0	0.017	1		01/08/20 02:45	14808-79-8	

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### QUALITY CONTROL DATA

Project: GEORGIA POWER PLANT MCMANUS  
Pace Project No.: 2627109

QC Batch: 41045 Analysis Method: EPA 7470A  
QC Batch Method: EPA 7470A Analysis Description: 7470 Mercury  
Associated Lab Samples: 2627109001, 2627109002, 2627109003, 2627109004, 2627109005, 2627109006

METHOD BLANK: 187261 Matrix: Water  
Associated Lab Samples: 2627109001, 2627109002, 2627109003, 2627109004, 2627109005, 2627109006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	12/24/19 09:05	

LABORATORY CONTROL SAMPLE: 187262

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0026	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 187263 187264

Parameter	Units	MS		MSD		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		2627234001 Result	Spike Conc.	Spike Conc.	Result						
Mercury	mg/L	ND	0.0025	0.0025	0.0027	0.0026	109	105	75-125	4	20

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### QUALITY CONTROL DATA

Project: GEORGIA POWER PLANT MCMANUS  
Pace Project No.: 2627109

QC Batch: 41378 Analysis Method: EPA 6010D  
QC Batch Method: EPA 3010A Analysis Description: 6010D MET  
Associated Lab Samples: 2627109001, 2627109002, 2627109003, 2627109004, 2627109005, 2627109006

METHOD BLANK: 188300 Matrix: Water  
Associated Lab Samples: 2627109001, 2627109002, 2627109003, 2627109004, 2627109005, 2627109006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Barium	mg/L	ND	0.010	0.0062	12/31/19 16:54	
Calcium	mg/L	ND	0.50	0.14	12/31/19 16:54	

LABORATORY CONTROL SAMPLE: 188301

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	1.0	101	80-120	
Calcium	mg/L	1	1.1	111	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 188302 188303

Parameter	Units	2627183024 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	Spike Conc.	MSD Result						
Barium	mg/L	96.1 ug/L	1	1.1	1	1.1	101	102	75-125	1	20	
Calcium	mg/L	1490 ug/L	1	2.5	1	2.6	99	107	75-125	3	20	

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### QUALITY CONTROL DATA

Project: GEORGIA POWER PLANT MCMANUS  
Pace Project No.: 2627109

QC Batch: 41105 Analysis Method: EPA 6020B  
QC Batch Method: EPA 3005A Analysis Description: 6020B MET  
Associated Lab Samples: 2627109001, 2627109002, 2627109003, 2627109004, 2627109005, 2627109006

METHOD BLANK: 187463 Matrix: Water  
Associated Lab Samples: 2627109001, 2627109002, 2627109003, 2627109004, 2627109005, 2627109006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	12/24/19 18:03	
Arsenic	mg/L	0.00045J	0.0050	0.00035	12/24/19 18:03	
Beryllium	mg/L	ND	0.0030	0.000074	12/24/19 18:03	
Boron	mg/L	ND	0.040	0.0049	12/24/19 18:03	
Cadmium	mg/L	ND	0.0025	0.00011	12/24/19 18:03	
Chromium	mg/L	ND	0.010	0.00039	12/24/19 18:03	
Cobalt	mg/L	ND	0.0050	0.00030	12/24/19 18:03	
Lead	mg/L	ND	0.0050	0.000046	12/24/19 18:03	
Lithium	mg/L	ND	0.030	0.00078	12/24/19 18:03	
Molybdenum	mg/L	ND	0.010	0.00095	12/24/19 18:03	
Selenium	mg/L	ND	0.010	0.0013	12/24/19 18:03	
Thallium	mg/L	ND	0.0010	0.000052	12/24/19 18:03	

LABORATORY CONTROL SAMPLE: 187464

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.10	105	80-120	
Arsenic	mg/L	0.1	0.10	103	80-120	
Beryllium	mg/L	0.1	0.10	103	80-120	
Boron	mg/L	1	1.0	103	80-120	
Cadmium	mg/L	0.1	0.10	102	80-120	
Chromium	mg/L	0.1	0.10	103	80-120	
Cobalt	mg/L	0.1	0.10	102	80-120	
Lead	mg/L	0.1	0.11	105	80-120	
Lithium	mg/L	0.1	0.10	104	80-120	
Molybdenum	mg/L	0.1	0.11	106	80-120	
Selenium	mg/L	0.1	0.10	101	80-120	
Thallium	mg/L	0.1	0.10	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 187465 187466

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		2626961001 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
Antimony	mg/L	ND	0.1	0.1	0.10	0.10	103	104	75-125	1	20	
Arsenic	mg/L	ND	0.1	0.1	0.10	0.10	104	103	75-125	0	20	
Beryllium	mg/L	ND	0.1	0.1	0.097	0.099	97	99	75-125	2	20	
Boron	mg/L	2.5	1	1	3.4	3.5	84	95	75-125	3	20	
Cadmium	mg/L	ND	0.1	0.1	0.10	0.10	102	103	75-125	1	20	

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### QUALITY CONTROL DATA

Project: GEORGIA POWER PLANT MCMANUS  
Pace Project No.: 2627109

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 187465												187466	
Parameter	Units	2626961001	MS	MSD	MS	MSD	MS	MSD	% Rec	Max	Qual		
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD			
Chromium	mg/L	0.00083J	0.1	0.1	0.10	0.10	103	100	75-125	3	20		
Cobalt	mg/L	0.00052J	0.1	0.1	0.10	0.10	100	99	75-125	1	20		
Lead	mg/L	0.00024J	0.1	0.1	0.10	0.10	102	102	75-125	1	20		
Lithium	mg/L	0.00098J	0.1	0.1	0.10	0.10	99	103	75-125	4	20		
Molybdenum	mg/L	ND	0.1	0.1	0.10	0.11	104	106	75-125	2	20		
Selenium	mg/L	0.013	0.1	0.1	0.11	0.11	101	102	75-125	0	20		
Thallium	mg/L	ND	0.1	0.1	0.10	0.10	102	103	75-125	1	20		

SAMPLE DUPLICATE: 187467

Parameter	Units	2627176001	Dup	RPD	Max	Qualifiers
		Result	Result		RPD	
Antimony	mg/L	ND	ND		20	
Arsenic	mg/L	ND	ND		20	
Beryllium	mg/L	ND	ND		20	
Boron	mg/L	ND	0.035J		20	
Cadmium	mg/L	ND	ND		20	
Chromium	mg/L	ND	0.00077J		20	
Cobalt	mg/L	ND	ND		20	
Lead	mg/L	ND	0.00022J		20	
Lithium	mg/L	ND	0.0020J		20	
Molybdenum	mg/L	ND	0.0073J		20	
Selenium	mg/L	ND	ND		20	
Thallium	mg/L	ND	ND		20	

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### QUALITY CONTROL DATA

Project: GEORGIA POWER PLANT MCMANUS  
Pace Project No.: 2627109

QC Batch: 40929 Analysis Method: SM 2540C  
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids  
Associated Lab Samples: 2627109001, 2627109002, 2627109003, 2627109004, 2627109005, 2627109006

LABORATORY CONTROL SAMPLE: 186865

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	398	100	84-108	

SAMPLE DUPLICATE: 186866

Parameter	Units	2627035001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	268	278	4	10	

SAMPLE DUPLICATE: 186867

Parameter	Units	2627109006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	16.0	10.0	46	10	D6

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### QUALITY CONTROL DATA

Project: GEORGIA POWER PLANT MCMANUS  
Pace Project No.: 2627109

QC Batch: 41598 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 2627109001, 2627109002, 2627109003, 2627109004, 2627109005, 2627109006

METHOD BLANK: 189136 Matrix: Water  
Associated Lab Samples: 2627109001, 2627109002, 2627109003, 2627109004, 2627109005, 2627109006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.024	01/07/20 23:27	
Fluoride	mg/L	ND	0.30	0.029	01/07/20 23:27	
Sulfate	mg/L	ND	1.0	0.017	01/07/20 23:27	

LABORATORY CONTROL SAMPLE: 189137

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	93	90-110	
Fluoride	mg/L	5	4.5	90	90-110	
Sulfate	mg/L	5	4.8	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 189138 189139

Parameter	Units	2627109001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2090	500	500	2150	2150	93	93	90-110	0	15	M6
Fluoride	mg/L	0.33	500	500	409	410	81	81	90-110	0	15	
Sulfate	mg/L	158J	500	500	782	780	102	101	90-110	0	15	

MATRIX SPIKE SAMPLE: 189140

Parameter	Units	2627109002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5660	1000	4350	39	90-110	
Fluoride	mg/L	ND	1000	797	78	90-110	M6
Sulfate	mg/L	535	1000	1440	90	90-110	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: GEORGIA POWER PLANT MCMANUS

Pace Project No.: 2627109

**Sample: MCM-18**      **Lab ID: 2627109001**      Collected: 12/18/19 09:12      Received: 12/19/19 11:35      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>9.01 ± 1.67 (0.389)</b> <b>C:92% T:NA</b>	pCi/L	12/31/19 08:34	13982-63-3	
Radium-228	EPA 9320	<b>7.98 ± 1.78 (1.25)</b> <b>C:64% T:84%</b>	pCi/L	01/02/20 15:04	15262-20-1	
Total Radium	Total Radium Calculation	<b>17.0 ± 3.45 (1.64)</b>	pCi/L	01/14/20 13:41	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: GEORGIA POWER PLANT MCMANUS

Pace Project No.: 2627109

**Sample: MCM-19**      **Lab ID: 2627109002**      Collected: 12/17/19 07:54      Received: 12/19/19 11:35      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>10.8 ± 1.91 (0.406)</b> <b>C:95% T:NA</b>	pCi/L	12/31/19 08:09	13982-63-3	
Radium-228	EPA 9320	<b>11.0 ± 2.29 (1.13)</b> <b>C:71% T:89%</b>	pCi/L	01/02/20 19:31	15262-20-1	
Total Radium	Total Radium Calculation	<b>21.8 ± 4.20 (1.54)</b>	pCi/L	01/14/20 13:41	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: GEORGIA POWER PLANT MCMANUS

Pace Project No.: 2627109

**Sample: MCM-20**      **Lab ID: 2627109003**      Collected: 12/18/19 08:04      Received: 12/19/19 11:35      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>22.3 ± 3.59 (0.397)</b> C:98% T:NA	pCi/L	12/31/19 08:10	13982-63-3	
Radium-228	EPA 9320	<b>33.5 ± 6.30 (1.26)</b> C:71% T:88%	pCi/L	01/02/20 19:31	15262-20-1	
Total Radium	Total Radium Calculation	<b>55.8 ± 9.89 (1.66)</b>	pCi/L	01/14/20 13:41	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: GEORGIA POWER PLANT MCMANUS

Pace Project No.: 2627109

**Sample: DUP-1**      **Lab ID: 2627109004**      Collected: 12/17/19 00:00      Received: 12/19/19 11:35      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>9.18 ± 1.68 (0.368)</b> C:97% T:NA	pCi/L	12/31/19 08:10	13982-63-3	
Radium-228	EPA 9320	<b>12.2 ± 2.57 (1.48)</b> C:71% T:84%	pCi/L	01/02/20 19:31	15262-20-1	
Total Radium	Total Radium Calculation	<b>21.4 ± 4.25 (1.85)</b>	pCi/L	01/14/20 13:41	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: GEORGIA POWER PLANT MCMANUS

Pace Project No.: 2627109

**Sample: FBL121719**      **Lab ID: 2627109005**      Collected: 12/17/19 09:10      Received: 12/19/19 11:35      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.534 ± 0.310 (0.471)</b> C:95% T:NA	pCi/L	12/31/19 08:10	13982-63-3	
Radium-228	EPA 9320	<b>0.855 ± 0.682 (1.36)</b> C:71% T:80%	pCi/L	01/02/20 19:31	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.39 ± 0.992 (1.83)</b>	pCi/L	01/14/20 13:41	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: GEORGIA POWER PLANT MCMANUS

Pace Project No.: 2627109

**Sample: EQBL121719**      **Lab ID: 2627109006**      Collected: 12/17/19 09:14      Received: 12/19/19 11:35      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.133 ± 0.253 (0.581)</b> C:94% T:NA	pCi/L	12/31/19 08:10	13982-63-3	
Radium-228	EPA 9320	<b>0.161 ± 0.589 (1.33)</b> C:69% T:77%	pCi/L	01/02/20 19:31	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.294 ± 0.842 (1.91)</b>	pCi/L	01/14/20 13:41	7440-14-4	

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: GEORGIA POWER PLANT MCMANUS

Pace Project No.: 2627109

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QC Batch:	377002	Analysis Method:	EPA 9315
QC Batch Method:	EPA 9315	Analysis Description:	9315 Total Radium
Associated Lab Samples:	2627109001, 2627109002, 2627109003, 2627109004, 2627109005, 2627109006		

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METHOD BLANK:	1828861	Matrix:	Water
Associated Lab Samples:	2627109001, 2627109002, 2627109003, 2627109004, 2627109005, 2627109006		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.249 ± 0.216 (0.370) C:94% T:NA	pCi/L	12/31/19 08:33	

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: GEORGIA POWER PLANT MCMANUS

Pace Project No.: 2627109

QC Batch: 376994 Analysis Method: EPA 9320

QC Batch Method: EPA 9320 Analysis Description: 9320 Radium 228

Associated Lab Samples: 2627109001, 2627109002, 2627109003, 2627109004, 2627109005, 2627109006

METHOD BLANK: 1828831 Matrix: Water

Associated Lab Samples: 2627109001, 2627109002, 2627109003, 2627109004, 2627109005, 2627109006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.605 ± 0.407 (0.773) C:65% T:84%	pCi/L	01/02/20 11:57	

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## QUALIFIERS

Project: GEORGIA POWER PLANT MCMANUS  
Pace Project No.: 2627109

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.  
ND - Not Detected at or above adjusted reporting limit.  
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.  
MDL - Adjusted Method Detection Limit.  
PQL - Practical Quantitation Limit.  
RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.  
S - Surrogate  
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.  
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.  
LCS(D) - Laboratory Control Sample (Duplicate)  
MS(D) - Matrix Spike (Duplicate)  
DUP - Sample Duplicate  
RPD - Relative Percent Difference  
NC - Not Calculable.  
SG - Silica Gel - Clean-Up  
U - Indicates the compound was analyzed for, but not detected.  
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.  
Act - Activity  
Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).  
Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)  
(MDC) - Minimum Detectable Concentration  
Trac - Tracer Recovery (%)  
Carr - Carrier Recovery (%)  
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.  
TNI - The NELAC Institute.

### LABORATORIES

PASI-GA Pace Analytical Services - Atlanta, GA  
PASI-PA Pace Analytical Services - Greensburg

### ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.  
D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.  
D6 The precision between the sample and sample duplicate exceeded laboratory control limits.  
M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: GEORGIA POWER PLANT MCMANUS  
Pace Project No.: 2627109

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2627109001	MCM-18	EPA 3010A	41378	EPA 6010D	41390
2627109002	MCM-19	EPA 3010A	41378	EPA 6010D	41390
2627109003	MCM-20	EPA 3010A	41378	EPA 6010D	41390
2627109004	DUP-1	EPA 3010A	41378	EPA 6010D	41390
2627109005	FBL121719	EPA 3010A	41378	EPA 6010D	41390
2627109006	EQBL121719	EPA 3010A	41378	EPA 6010D	41390
2627109001	MCM-18	EPA 3005A	41105	EPA 6020B	41107
2627109002	MCM-19	EPA 3005A	41105	EPA 6020B	41107
2627109003	MCM-20	EPA 3005A	41105	EPA 6020B	41107
2627109004	DUP-1	EPA 3005A	41105	EPA 6020B	41107
2627109005	FBL121719	EPA 3005A	41105	EPA 6020B	41107
2627109006	EQBL121719	EPA 3005A	41105	EPA 6020B	41107
2627109001	MCM-18	EPA 7470A	41045	EPA 7470A	41119
2627109002	MCM-19	EPA 7470A	41045	EPA 7470A	41119
2627109003	MCM-20	EPA 7470A	41045	EPA 7470A	41119
2627109004	DUP-1	EPA 7470A	41045	EPA 7470A	41119
2627109005	FBL121719	EPA 7470A	41045	EPA 7470A	41119
2627109006	EQBL121719	EPA 7470A	41045	EPA 7470A	41119
2627109001	MCM-18	EPA 9315	377002		
2627109002	MCM-19	EPA 9315	377002		
2627109003	MCM-20	EPA 9315	377002		
2627109004	DUP-1	EPA 9315	377002		
2627109005	FBL121719	EPA 9315	377002		
2627109006	EQBL121719	EPA 9315	377002		
2627109001	MCM-18	EPA 9320	376994		
2627109002	MCM-19	EPA 9320	376994		
2627109003	MCM-20	EPA 9320	376994		
2627109004	DUP-1	EPA 9320	376994		
2627109005	FBL121719	EPA 9320	376994		
2627109006	EQBL121719	EPA 9320	376994		
2627109001	MCM-18	Total Radium Calculation	379303		
2627109002	MCM-19	Total Radium Calculation	379303		
2627109003	MCM-20	Total Radium Calculation	379303		
2627109004	DUP-1	Total Radium Calculation	379303		
2627109005	FBL121719	Total Radium Calculation	379303		
2627109006	EQBL121719	Total Radium Calculation	379303		
2627109001	MCM-18	SM 2540C	40929		
2627109002	MCM-19	SM 2540C	40929		
2627109003	MCM-20	SM 2540C	40929		
2627109004	DUP-1	SM 2540C	40929		
2627109005	FBL121719	SM 2540C	40929		
2627109006	EQBL121719	SM 2540C	40929		
2627109001	MCM-18	EPA 300.0	41598		
2627109002	MCM-19	EPA 300.0	41598		
2627109003	MCM-20	EPA 300.0	41598		

### REPORT OF LABORATORY ANALYSIS

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**QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project: GEORGIA POWER PLANT MCMANUS  
Pace Project No.: 2627109

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2627109004	DUP-1	EPA 300.0	41598		
2627109005	FBL121719	EPA 300.0	41598		
2627109006	EQBL121719	EPA 300.0	41598		

**REPORT OF LABORATORY ANALYSIS**

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# CHAIN-OF-CUSTODY / Analytical Request Document

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

<b>Section A</b> Required Client Information:	<b>Section B</b> Required Project Information:	<b>Section C</b> Invoice Information:	
Company: Georgia Power	Report To: Joju Abraham <i>Joju Abraham</i>	Attention:	
Address: 2480 Maner Road	Copy To: <i>Kevin Stimpert</i>	Company Name:	
Atlanta, GA 30339	Purchase Order #:	Address:	Regulatory Agency
Email: jabraham@southernco.com	Project Name: Georgia Power - Plant McManus CCR Scope	Pace Project Manager: betsy.mcdaniel@pacelabs.com	State / Location
Phone: (404) 506-7239 Fax:	Project #:	Pace Profile #: 334	GA
Requested Due Date:			

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9 / . -) Sample Ids must be unique	MATRIX Drinking Water Water Waste Water Product Soil/Solid Oil Wipe Air Other Tissue	CODE DW WT WW P SL OL WP AR OT TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED				SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives								Y/N	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)				
						START		END				Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other				Analyses Test	Radium 226/228	Metals (CCR App. III & App. IV)	TDS, Cl, F, SO4
						DATE	TIME	DATE	TIME																	
1	MCM-18				G	12/18/19	0912			1									X	X	X					
2	MCM-19				G	12/18/19	0754			1									X	X	X					
3	MCM-20				G	12/18/19	0804			1									X	X	X					
4	Dsp-1				G	12/17/19				1									X	X	X					
6	EBL121719				G	12/17/19	0910			1									X	X	X					
6	EBBL121719				G	12/17/19	0914			1									X	X	X					
7																										
8																										
9																										
10																										
11																										
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	<i>Kevin Stimpert</i>	12/18/19	1236	<i>Joju Abraham</i>	12/19	11:35	
				<i>Betsy McDaniel</i>			

<b>SAMPLER NAME AND SIGNATURE</b>		TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:					
SIGNATURE OF SAMPLER:	DATE signed: 12/18/19				



**Sample Condition Upon Receipt**

*Peace Analytical*

Client Name: Georgia Power Project # \_\_\_\_\_

Optional Proj. Due Date: Proj. Name:
--

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Other \_\_\_\_\_  
 Tracking #: 77906312459c

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

Packing Material:  Bubble Wrap  Bubble Bags  None  Other Plastic Bag

Thermometer Used THR214 Type of Ice:  Wet  Blue  None  Samples on ice, cooling process has begun

Cooler Temperature 0.4°C Biological Tissue Is Frozen: Yes No

Comments: Date and Initials of person examining contents: <u>WRK</u>
---

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

Client Notification/ Resolution: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Field Data Required? Y / N

Person Contacted: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

3000 W28

Project Manager Review: \_\_\_\_\_ Date: \_\_\_\_\_

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



**Stage 2A Data Verification Report  
Georgia Power  
McManus Fossil Plant  
Coal Combustion Residuals Project  
Groundwater Samples**

This quality assurance (QA) review is based upon an examination of the data generated from the analyses of the 21 groundwater samples collected as part of the 2019 Background Monitoring at the Georgia Power McManus Fossil Plant facility. These samples were collectively analyzed by Pace Analytical Services LLC (Pace) in Peachtree Corners, Georgia (Pace Atlanta), for total metals by SW-846 Method 6020B; for total mercury by SW-846 Method 7470A; for total dissolved solids (TDS) by Standard Method (SM) 2540C; and for anions (specifically, chloride, fluoride, and sulfate) by US EPA Method 300.0. In addition, these samples were collectively analyzed by Pace of Greensburg, Pennsylvania (Pace Pittsburgh), for total radium-226 by SW-846 Method 9315, for total radium-228 by SW-846 Method 9320, and for combined radium-226+228 by calculation.

This review was performed with guidance from the US EPA Region IV Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (November 2001); the US EPA Region IV Data Validation Standard Operating Procedures (SOPs; US EPA Region IV, September 2011); and the applied analytical methods. These validation guidance documents, with the exception of the analytical methods, specifically address analyses performed in accordance with the Contract Laboratory Program (CLP) analytical methods and are not completely applicable to the type of analyses and analytical protocols performed for the SM, SW-846, and US EPA methods utilized by the laboratory for these samples. Environmental Standards, Inc. (Environmental Standards) used professional judgment to determine the usability of the analytical results and compliance relative to the SM, SW-846, and US EPA methods utilized by the laboratory.

## **Summary**

The analytical results and associated laboratory quality control (QC) samples were reviewed to determine the integrity of the reported analytical results and to verify that the data met the established data quality objectives.

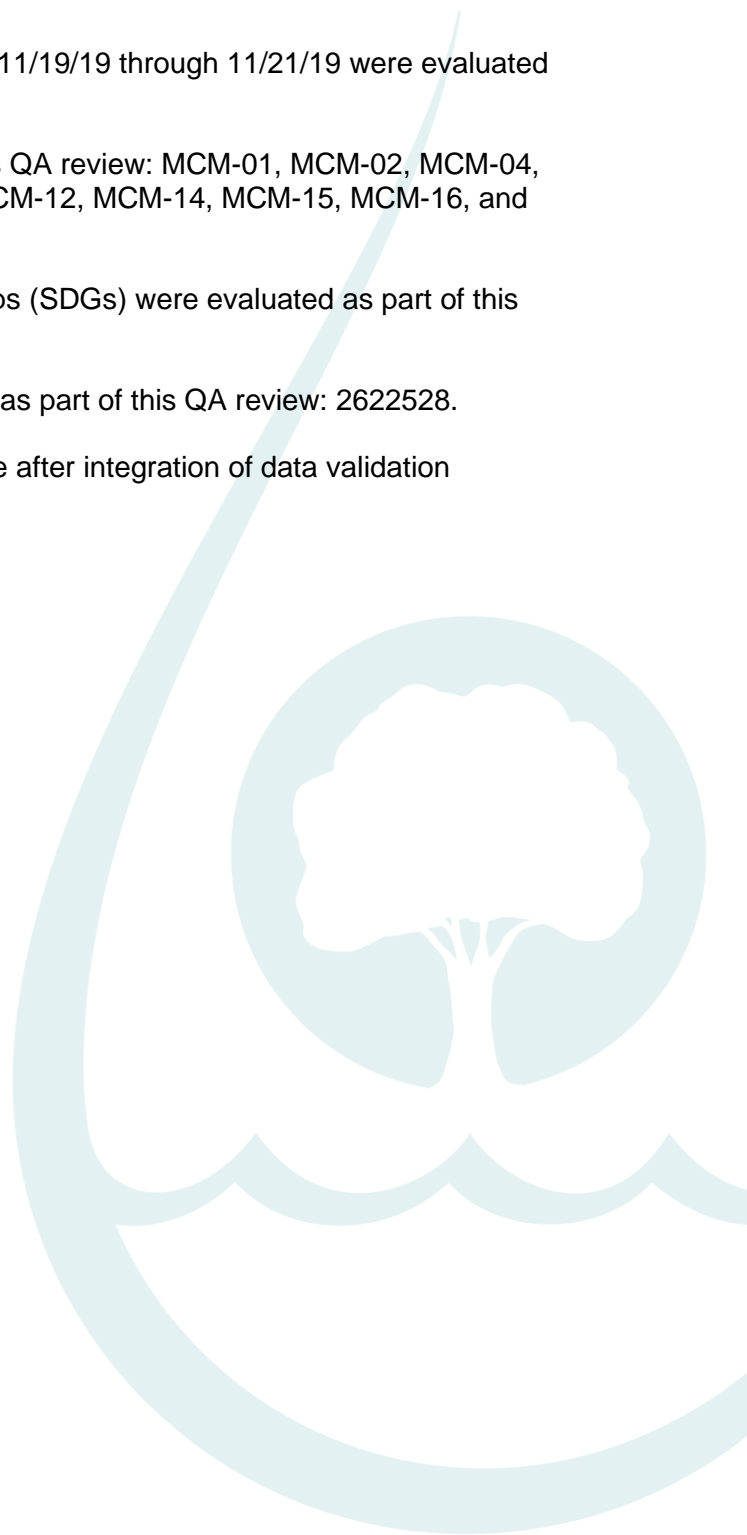
The samples collected 8/26/19 through 8/28/19 and 11/19/19 through 11/21/19 were evaluated as part of this QA review.

The following samples were evaluated as part of this QA review: MCM-01, MCM-02, MCM-04, MCM-05, MCM-06, MCM-07, MCM-08, MCM-11, MCM-12, MCM-14, MCM-15, MCM-16, and MCM-17.

The following Pace inorganic Sample Delivery Groups (SDGs) were evaluated as part of this QA review: 2622524 and 2626070.

The following Pace radiological SDG was evaluated as part of this QA review: 2622528.

All data are considered usable as reported, or usable after integration of data validation qualifications.



## **Inorganic and Radiological Data Review**

Data validation was performed for these samples based on the sample results, summary QC data, and raw data provided by the laboratory. The findings offered in this report for the inorganic and radiological analyses are based upon a review of the following QC measures:

- Sample condition upon laboratory receipt
- Chain-of-Custody (COC) Records
- Blank analysis results
- Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) recoveries and precision
- Laboratory duplicate precision
- Sample holding times
- Case Narratives
- Chemical yield
- Matrix spike/matrix spike duplicate (MS/MSD) recoveries and precision
- Field duplicate precision

The above QC measures were evaluated against the analytical method requirements and QC acceptance criteria. The data were validated based on guidance from the US EPA Region IV Data Validation SOPs, the referenced procedures, and were qualified as appropriate as described in the sections below.

## **Comments and Exceptions**

1. In all SDGs, the laboratory did not provide a Case Narrative associated with the inorganic and radiological analyses. As this item was not needed to complete the data validation, the laboratory had not been requested to provide this information. Qualification of data due to this issue was not warranted.
2. In SDG 2622528, the laboratory did not provide the subcontracted COC Record or the Sample Login Receipt Checklist from Pace Pittsburgh. As these items were not needed to complete the data validation, the laboratory had not been requested to provide this information. Qualification of data due to this issue was not warranted.
3. In the anion fraction of SDG 2622524, the laboratory performed matrix QC (MS/MSD) analyses on an associated equipment blank. Matrix QC analyses are performed to evaluate the impact of matrix interferences on target analyte results in investigative samples, which would not be present in a field blank sample. The data reviewer evaluated the MS/MSD analyses performed on the field blank as an LCS/LCSD analysis.
4. The data validator applied qualification to combined radium-226+228 based upon the QC samples associated with the analyses of the individual isotopes, radium-226 and radium-228. The electronic data deliverable (EDD) and the database only include the laboratory results for the combined radium-226+228; therefore, qualification of the individual isotopes is not addressed in this QA review.
5. SW-846 Method 9315 includes all alpha-emitting isotopes of radium. In order to analyze for only radium-226, a 21-day ingrowth period must be used. The radium-226 reported by the laboratory did not undergo a 21-day ingrowth; therefore, the results reported as

radium-226 potentially contain additional alpha-emitting radium isotopes and could be high biased.

6. Combined radium-226+228 was reported as the summation of the calculated activities for radium-226 and radium-228. As consistent with routine radiological reporting conventions, negative activities were reported for the radium-226 and radium-228 analyses; however, all negative activities were entered as zero in the calculation of combined radium-226+228 activity.
7. The combined radium-226+228 sample-specific minimum detectable concentration (MDC) was reported as the summation of the MDCs for radium-226 and radium-228. Consequently, there may be instances where a detection was observed in one of the individual isotopes but the combined radium-226+228 result was reported as “not-detected” due to the laboratory’s reporting convention for combined radium-226+228.
8. The combined radium-226+228 result uncertainty was reported as the summation of the calculated uncertainties for radium-226 and radium-228. If routine statistical uncertainty reporting conventions were followed, the result uncertainty would have been reported as the root sum square (RSS; the square root of the sum of the squared individual uncertainties).
9. The laboratory did not flag results < the MDC as “not-detected” in the data package provided. The data validator qualified these samples as “U” on the data tables.
10. The following field duplicate pairs (see table) were submitted and analyzed for inorganic and radiological parameters with this data set. Acceptable precision and sample representativeness were demonstrated by the reported results in the field duplicate pair evaluation (the relative percent difference [RPD] between results was  $\leq 20\%$  when both results were  $\geq 5\times$  the reporting limit [RL], the difference between results was  $\leq$  the RL when at least one result was  $< 5\times$  the RL, or replicate error ratio [RER]  $< 3$ ).

<u>Laboratory SDG(s)</u>	<u>Sample</u>	<u>Field Duplicate</u>
2622524 2622528	MCM-14	Dup-01
2622524 2622528	MCM-05	Dup-02
2626070	MCM-08	DUP-1

**Overall Assessment of Data**

Based on a review of the data, qualification of data was warranted as noted below.

<u>Laboratory SDG(s)</u>	<u>Sample(s)</u>	<u>Analyte(s)</u>	<u>Qualifier(s)</u>	<u>Reason(s) for Qualification</u>
2622524	MCM-07 MCM-08, MCM-11, MCM-12, MCM-14, MCM-15, MCM-16, and MCM-17	fluoride	J/UR	M- – Very low MS/MSD recoveries
2622524	MCM-01, MCM-04, MCM-05, MCM-11, MCM-12, MCM-14, MCM-15, MCM-16, and MCM-17	arsenic	U*	BE – Equipment blank contamination BF – Field blank contamination
2622528	MCM-05	combined radium-226+228	U*	BE – Equipment blank contamination BL – Method blank contamination
2622528	MCM-02	combined radium-226+228	UJ	L- – Low LCSD recovery

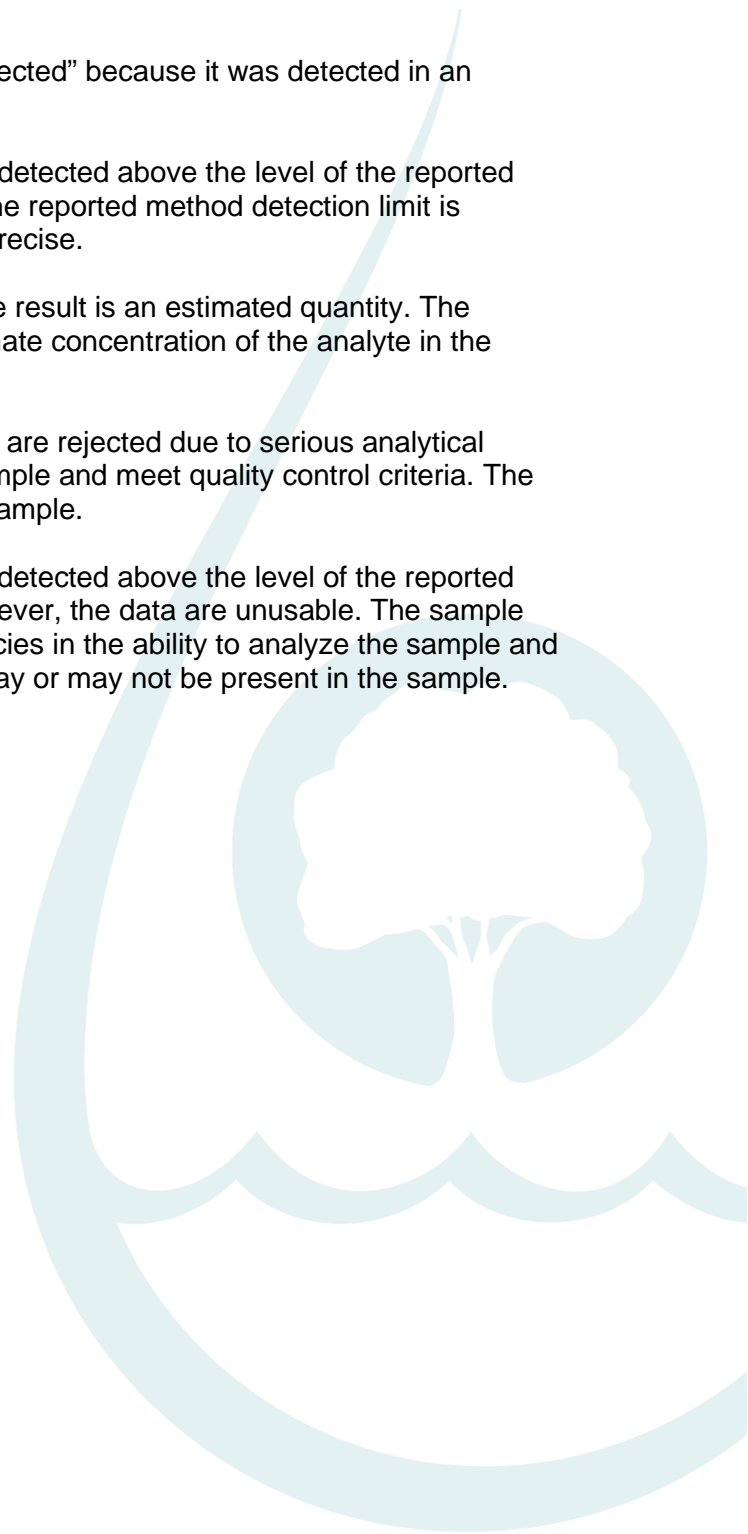
- All inorganic positive results reported between the method detection limit (MDL) and RL have been flagged “J.”
- All radiological results reported below the MDC have been flagged “U.”

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Report prepared by: Abigail P. Roselli, M.S., Quality Assurance Chemist  
 Report reviewed by: Alyssa M. Reed, Senior Quality Assurance Chemist/Project Manager  
 Report approved by: David I. Thal, CEAC, CQA, Principal Chemist  
 Date: 1/6/2020

## **INORGANIC AND RADIOLOGICAL DATA QUALIFIERS**

- U - The analyte was analyzed for, but was not detected above the level of the reported sample reporting/method detection limit.
- U\* - This analyte should be considered “not-detected” because it was detected in an associated blank at a similar level.
- UJ - The analyte was analyzed for, but was not detected above the level of the reported sample reporting/method detection limit. The reported method detection limit is approximate and may be inaccurate or imprecise.
- J - The analyte was positively identified but the result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
- R - The data are unusable. The sample results are rejected due to serious analytical deficiencies in the ability to analyze the sample and meet quality control criteria. The analyte may or may not be present in the sample.
- UR - The analyte was analyzed for, but was not detected above the level of the reported sample reporting or method detection; however, the data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The analyte may or may not be present in the sample.



### Reason Codes and Explanations

Reason Code	Explanation
BE	Equipment blank contamination. The result should be considered "not-detected."
BF	Field blank contamination. The result should be considered "not-detected."
BL	Laboratory blank contamination. The result should be considered "not-detected."
BN	Negative laboratory blank contamination.
C	Initial and/or continuing calibration issue, indeterminate bias.
C+	Initial and/or continuing calibration issue. The result may be biased high.
C-	Initial and/or continuing calibration issue. The result may be biased low.
FD	Field duplicate imprecision.
FG	Total versus dissolved imprecision.
H	Holding time exceeded.
I	Internal standard recovery outside of acceptance limits.
L	LCS and LCSD recoveries outside of acceptance limits, indeterminate bias.
L+	LCS and/or LCSD recoveries outside of acceptance limits. The result may be biased high.
L-	LCS and/or LCSD recoveries outside of acceptance limits. The result may be biased low.
LD	Laboratory duplicate imprecision.
LP	LCS/LCSD imprecision.
M	MS and MSD recoveries outside of acceptance limits, indeterminate bias.
M+	MS and/or MSD recoveries outside of acceptance limits. The result may be biased high.
M-	MS and/or MSD recoveries outside of acceptance limits. The result may be biased low.
MP	MS/MSD imprecision.
P	Post-digestion spike recoveries outside of acceptance limits, indeterminate bias.
P+	Post-digestion spike recovery outside of acceptance limits. The result may be biased high.
P-	Post-digestion spike recovery outside of acceptance limits. The result may be biased low.
Q	Chemical preservation issue.
R	RL standards outside of acceptance limits, indeterminate bias.
R+	RL standard(s) outside of acceptance limits. The result may be biased high.
R-	RL standard(s) outside of acceptance limits. The result may be biased low.
T	Temperature preservation issue.
SD	Serial dilution imprecision.
Y	Chemical yields outside of acceptance limits, indeterminate bias.
Y+	Chemical yield(s) outside of acceptance limits. The result may be biased high.
Y-	Chemical yield(s) outside of acceptance limits. The result may be biased low.
ZZ	Other

**Stage 2A Data Verification Report  
Georgia Power  
McManus Fossil Plant  
Coal Combustion Residuals Project  
Groundwater Samples**

This quality assurance (QA) review is based upon an examination of the data generated from the analyses of the 13 groundwater samples collected as part of the 2019 detection monitoring at the Georgia Power McManus Fossil Plant facility. These samples were collectively analyzed by Pace Analytical Services, LLC (Pace) in Peachtree Corners, Georgia (Pace Atlanta) for total metals by SW-846 Method 6020B; for total dissolved solids (TDS) by Standard Method (SM) 2540C; and for anions (specifically, chloride, fluoride, and sulfate) by US EPA Method 300.0.

This review was performed with guidance from the US EPA Region IV Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (November 2001); the US EPA Region IV Data Validation Standard Operating Procedures (SOPs; US EPA Region IV, September 2011); and the applied analytical methods. These validation guidance documents, with the exception of the analytical methods, specifically address analyses performed in accordance with the Contract Laboratory Program (CLP) analytical methods and are not completely applicable to the type of analyses and analytical protocols performed for the SM, SW-846, and US EPA methods utilized by the laboratory for these samples. Environmental Standards, Inc. (Environmental Standards) used professional judgment to determine the usability of the analytical results and compliance relative to the SM, SW-846, and US EPA methods utilized by the laboratory.

### **Summary**

The analytical results and associated laboratory quality control (QC) samples were reviewed to determine the integrity of the reported analytical results and to verify that the data met the established data quality objectives.

The samples collected 10/15/2019 through 10/17/19 were evaluated as part of this QA review.

The following samples were evaluated as part of this QA review: MCM-01, MCM-02, MCM-04, MCM-05, MCM-06, MCM-07, MCM-08, MCM-11, MCM-12, MCM-14, MCM-15, MCM-16, and MCM-17.

The following Pace inorganic SDGs were evaluated as part of this QA review: 2624541, 2624543, and 2624794.

All data are considered usable as reported, or usable after integration of data validation qualifications.



## Inorganic Data Review

Data validation was performed for these samples based on the sample results, summary QC data, and raw data provided by the laboratory. The findings offered in this report for the inorganic analyses are based upon a review of the following QC measures:

- Sample condition upon laboratory receipt
- Chain-of-Custody (COC) Records
- Laboratory control sample (LCS) recoveries
- Laboratory duplicate precision
- Sample holding times
- Case Narratives
- Matrix spike/matrix spike duplicate (MS/MSD) recoveries and precision
- Field duplicate precision

The above QC measures were evaluated against the analytical method requirements and QC acceptance criteria. The data were validated based on guidance from the US EPA Region IV Data Validation SOPs, the referenced procedures, and were qualified as appropriate as described in the sections below.

## Comments and Exceptions

1. In all SDGs, the laboratory did not provide a Case Narrative associated with the metals and general chemistry analyses. As this item was not needed to complete the data validation, the laboratory had not been requested to provide this information. Qualification of data due to this issue was not warranted.
2. The following field duplicate pairs (see table) were submitted and analyzed for inorganic parameters with this data set. Acceptable precision and sample representativeness were demonstrated by the reported results in the field duplicate pair evaluation. (The relative percent difference [RPD] between results was  $\leq 20\%$  when both results were  $\geq 5\times$  the reporting limit [RL], the difference between results was  $\leq$  the RL when at least one result was  $< 5\times$  the RL.)

<u>Laboratory SDG(s)</u>	<u>Sample</u>	<u>Field Duplicate</u>
2624541	MCM-14	DUP-1
2624543	MCM-05	DUP-2

**Overall Assessment of Data**

Based on a review of the data, qualification of data was warranted as noted below.

<u>Laboratory SDG(s)</u>	<u>Sample(s)</u>	<u>Analyte(s)</u>	<u>Qualifier(s)</u>	<u>Reason(s) for Qualification</u>
2624541	MCM-04, MCM-12, and MCM-15	arsenic	U*	BF – Field blank contamination BE – Equipment blank contamination BL – Laboratory blank Contamination
2624541	MCM-14	arsenic	U*	BF – Field blank contamination BE – Equipment blank contamination
2624541	MCM-04 and MCM-15	fluoride	U*	BF – Field blank contamination
2624541	MCM-12	sulfate	U*	BE – Equipment blank contamination
2624543	MCM-02, MCM-05, MCM-16, MCM-17	arsenic	U*	BF – Field blank contamination BE – Equipment blank contamination BL – Laboratory blank Contamination
2624543	MCM-11	arsenic	U*	BF – Field blank contamination BE – Equipment blank contamination
2624794	MCM-06	antimony	U*	BL – Laboratory blank contamination
2624794	MCM-07	arsenic	U*	BF – Field blank contamination BE – Equipment blank contamination
2624794	all samples	TDS	J	H – Holding time exceeded
2624541	all samples	chloride	J	M- – Low MS recovery
2624543	all samples	chloride and sulfate	J	M- – Low MS/MSD recoveries
2624794	all samples	selenium	J	M- – Low MS/MSD recoveries

- All inorganic positive results reported between the method detection limit (MDL) and RL have been flagged "J" (unless previously flagged "U\*").

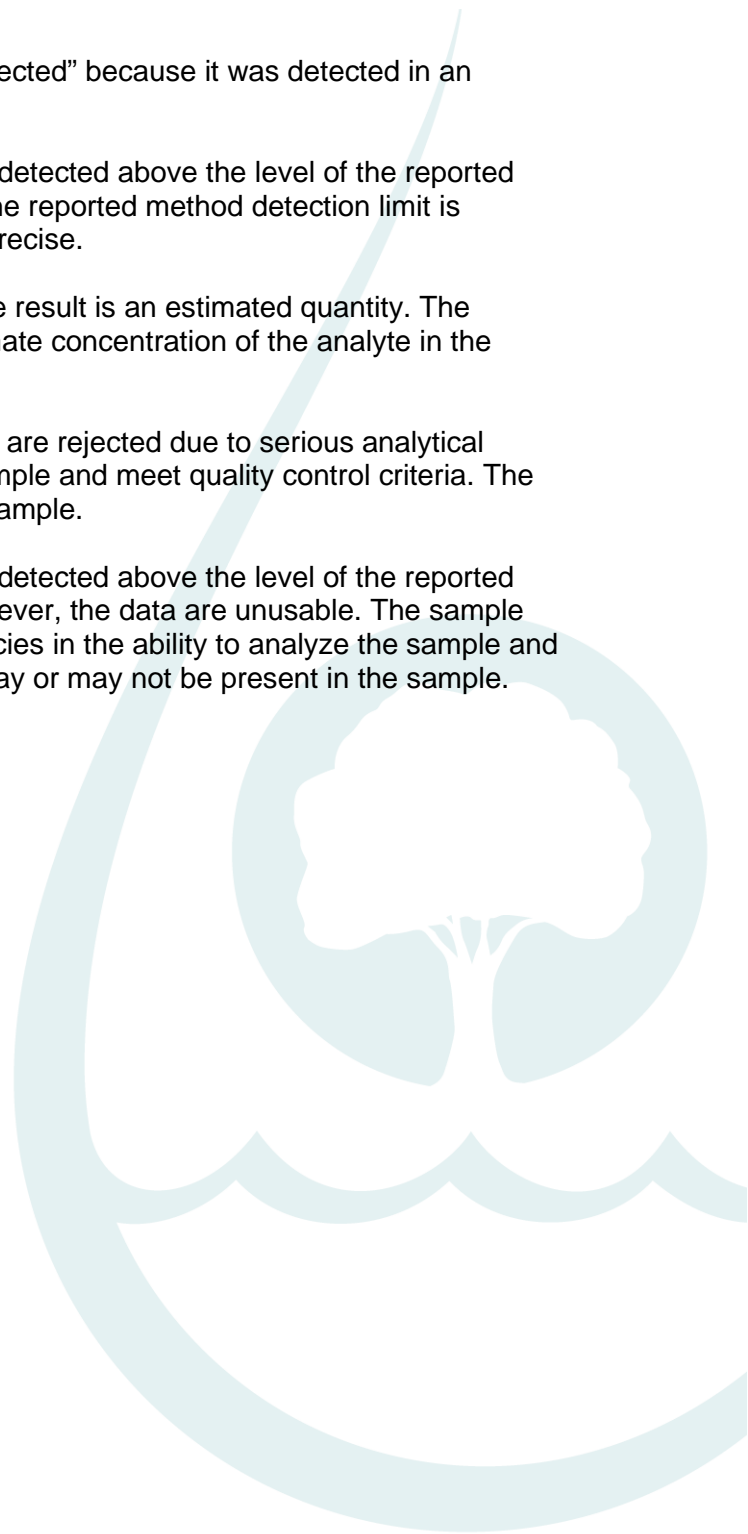
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Report prepared by: Abigail P. Roselli, Quality Assurance Chemist  
Report reviewed by: Alyssa M. Reed, Senior Quality Assurance Chemist  
Report reviewed by: Alyssa M. Reed, Senior Quality Assurance Chemist/Project Manager  
Report approved by: David I. Thal, CEAC, CQA, Principal Chemist  
Date: 12/16/2019



## **INORGANIC DATA QUALIFIERS**

- U - The analyte was analyzed for, but was not detected above the level of the reported sample reporting/method detection limit.
- U\* - This analyte should be considered “not-detected” because it was detected in an associated blank at a similar level.
- UJ - The analyte was analyzed for, but was not detected above the level of the reported sample reporting/method detection limit. The reported method detection limit is approximate and may be inaccurate or imprecise.
- J - The analyte was positively identified but the result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
- R - The data are unusable. The sample results are rejected due to serious analytical deficiencies in the ability to analyze the sample and meet quality control criteria. The analyte may or may not be present in the sample.
- UR - The analyte was analyzed for, but was not detected above the level of the reported sample reporting or method detection; however, the data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The analyte may or may not be present in the sample.



### Reason Codes and Explanations

Reason Code	Explanation
BE	Equipment blank contamination. The result should be considered "not-detected."
BF	Field blank contamination. The result should be considered "not-detected."
BL	Laboratory blank contamination. The result should be considered "not-detected."
BN	Negative laboratory blank contamination.
C	Initial and/or continuing calibration issue, indeterminate bias.
C+	Initial and/or continuing calibration issue. The result may be biased high.
C-	Initial and/or continuing calibration issue. The result may be biased low.
FD	Field duplicate imprecision.
FG	Total versus dissolved imprecision.
H	Holding time exceeded.
I	Internal standard recovery outside of acceptance limits.
L	LCS and LCSD recoveries outside of acceptance limits, indeterminate bias.
L+	LCS and/or LCSD recoveries outside of acceptance limits. The result may be biased high.
L-	LCS and/or LCSD recoveries outside of acceptance limits. The result may be biased low.
LD	Laboratory duplicate imprecision.
LP	LCS/LCSD imprecision.
M	MS and MSD recoveries outside of acceptance limits, indeterminate bias.
M+	MS and/or MSD recoveries outside of acceptance limits. The result may be biased high.
M-	MS and/or MSD recoveries outside of acceptance limits. The result may be biased low.
MP	MS/MSD imprecision.
P	Post-digestion spike recoveries outside of acceptance limits, indeterminate bias.
P+	Post-digestion spike recovery outside of acceptance limits. The result may be biased high.
P-	Post-digestion spike recovery outside of acceptance limits. The result may be biased low.
Q	Chemical preservation issue.
R	RL standards outside of acceptance limits, indeterminate bias.
R+	RL standard(s) outside of acceptance limits. The result may be biased high.
R-	RL standard(s) outside of acceptance limits. The result may be biased low.
T	Temperature preservation issue.
SD	Serial dilution imprecision.
Y	Chemical yields outside of acceptance limits, indeterminate bias.
Y+	Chemical yield(s) outside of acceptance limits. The result may be biased high.
Y-	Chemical yield(s) outside of acceptance limits. The result may be biased low.
ZZ	Other

**Stage 2A Data Verification Report  
Georgia Power  
McManus Fossil Plant  
Coal Combustion Residuals Project  
Groundwater Samples**

This quality assurance (QA) review is based upon an examination of the data generated from the analyses of the 13 groundwater samples collected as part of the 2019 detection monitoring at the Georgia Power McManus Fossil Plant facility. These samples were collectively analyzed by Pace Analytical Services, LLC in Greensburg, Pennsylvania (Pace Pittsburgh) for total radium-226 by SW-846 Method 9315, for total radium-228 by SW-846 Method 9320, and for combined radium-226+228 by calculation.

This review was performed with guidance from the US EPA Region IV Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (November 2001); the US EPA Region IV Data Validation Standard Operating Procedures (SOPs; US EPA Region IV, September 2011); and the applied analytical methods. These validation guidance documents, with the exception of the analytical methods, specifically address analyses performed in accordance with the Contract Laboratory Program (CLP) analytical methods and are not completely applicable to the type of analyses and analytical protocols performed for the SM, SW-846, and US EPA methods utilized by the laboratory for these samples. Environmental Standards, Inc. (Environmental Standards) used professional judgment to determine the usability of the analytical results and compliance relative to the SM, SW-846, and US EPA methods utilized by the laboratory.

### **Summary**

The analytical results and associated laboratory quality control (QC) samples were reviewed to determine the integrity of the reported analytical results and to verify that the data met the established data quality objectives.

The samples collected 10/15/2019 through 10/17/19 were evaluated as part of this QA review.

The following samples were evaluated as part of this QA review: MCM-01, MCM-02, MCM-04, MCM-05, MCM-06, MCM-07, MCM-08, MCM-11, MCM-12, MCM-14, MCM-15, MCM-16, and MCM-17.

The following Pace radiological SDGs were evaluated as part of this QA review: 30331322, 30331305, and 30332802.

All data are considered usable as reported, or usable after integration of data validation qualifications.

## **Radiological Data Review**

Data validation was performed for these samples based on the sample results, summary QC data, and raw data provided by the laboratory. The findings offered in this report for the radiological analyses are based upon a review of the following QC measures:

- Sample condition upon laboratory receipt
- Chain-of-Custody (COC) Records
- Blank analysis results
- Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) recoveries and precision
- Laboratory duplicate precision
- Sample holding times
- Case Narratives
- Chemical yield
- Field duplicate precision

The above QC measures were evaluated against the analytical method requirements and QC acceptance criteria. The data were validated based on guidance from the US EPA Region IV Data Validation SOPs, the referenced procedures, and were qualified as appropriate as described in the sections below.

## **Comments and Exceptions**

1. In all SDGs, the laboratory did not provide a Case Narrative associated with the radiological analyses. As this item was not needed to complete the data validation, the laboratory had not been requested to provide this information. Qualification of data due to this issue was not warranted.
2. In all SDGs, the laboratory only provided the subcontract Chain-of-Custody (COC) Record. As the original COC Record had been included in the associated inorganic data package, the laboratory had not been requested to provide this information. Qualification of data due to this issue was not warranted.
3. The data validator applied qualification to combined radium-226+228 based upon the QC samples associated with the analyses of the individual isotopes, radium-226 and radium-228. The electronic data deliverable (EDD) and the database only include the laboratory results for the combined radium-226+228; therefore, qualification of the individual isotopes is not addressed in this QA review.
4. SW-846 Method 9315 includes all alpha-emitting isotopes of radium. In order to analyze for only radium-226, a 21-day ingrowth period must be used. The radium-226 reported by the laboratory did not undergo a 21-day ingrowth; therefore, the results reported as radium-226 potentially contain additional alpha-emitting radium isotopes and could be high biased.
5. Combined radium-226+228 was reported as the summation of the calculated activities for radium-226 and radium-228. As consistent with routine radiological reporting conventions, negative activities were reported for the radium-226 and radium-228

analyses; however, all negative activities were entered as zero in the calculation of combined radium-226+228 activity.

6. The combined radium-226+228 sample-specific minimum detectable concentration (MDC) was reported as the summation of the MDCs for radium-226 and radium-228. Consequently, there may be instances where a detection was observed in one of the individual isotopes but the combined radium-226+228 result was reported as “not-detected” due to the laboratory’s reporting convention for combined radium-226+228.
7. The combined radium-226+228 result uncertainty was reported as the summation of the calculated uncertainties for radium-226 and radium-228. If routine statistical uncertainty reporting conventions were followed, the result uncertainty would have been reported as the root sum square (RSS; the square root of the sum of the squared individual uncertainties).
8. The laboratory did not flag results < the MDC as “not-detected” in the data package provided. The data validator qualified these samples as “U” on the data tables.
9. The following field duplicate pairs (see table) were submitted and analyzed for radiological parameters with this data set. Acceptable precision and sample representativeness were demonstrated by the reported results in the field duplicate pair evaluation (replicate error ratio [RER] < 3).

<u>Laboratory SDG(s)</u>	<u>Sample</u>	<u>Field Duplicate</u>
30331305	MCM-14	DUP-1
30331322	MCM-05	DUP-2



**Overall Assessment of Data**

Based on a review of the data, qualification of data was warranted as noted below.

<u>Laboratory SDG(s)</u>	<u>Sample(s)</u>	<u>Analyte</u>	<u>Qualifier(s)</u>	<u>Reason(s) for Qualification</u>
30331322	MCM-05 and MCM-16	combined radium-226+228	U*	BE – Equipment blank contamination BF – Field blank contamination
30331305	all samples	combined radium-226+228	J/UJ	L- – Low LCS recovery
30331322	all samples	combined radium-226+228	J/UJ (unless previously flagged “U**”)	L- – Low LCS recovery

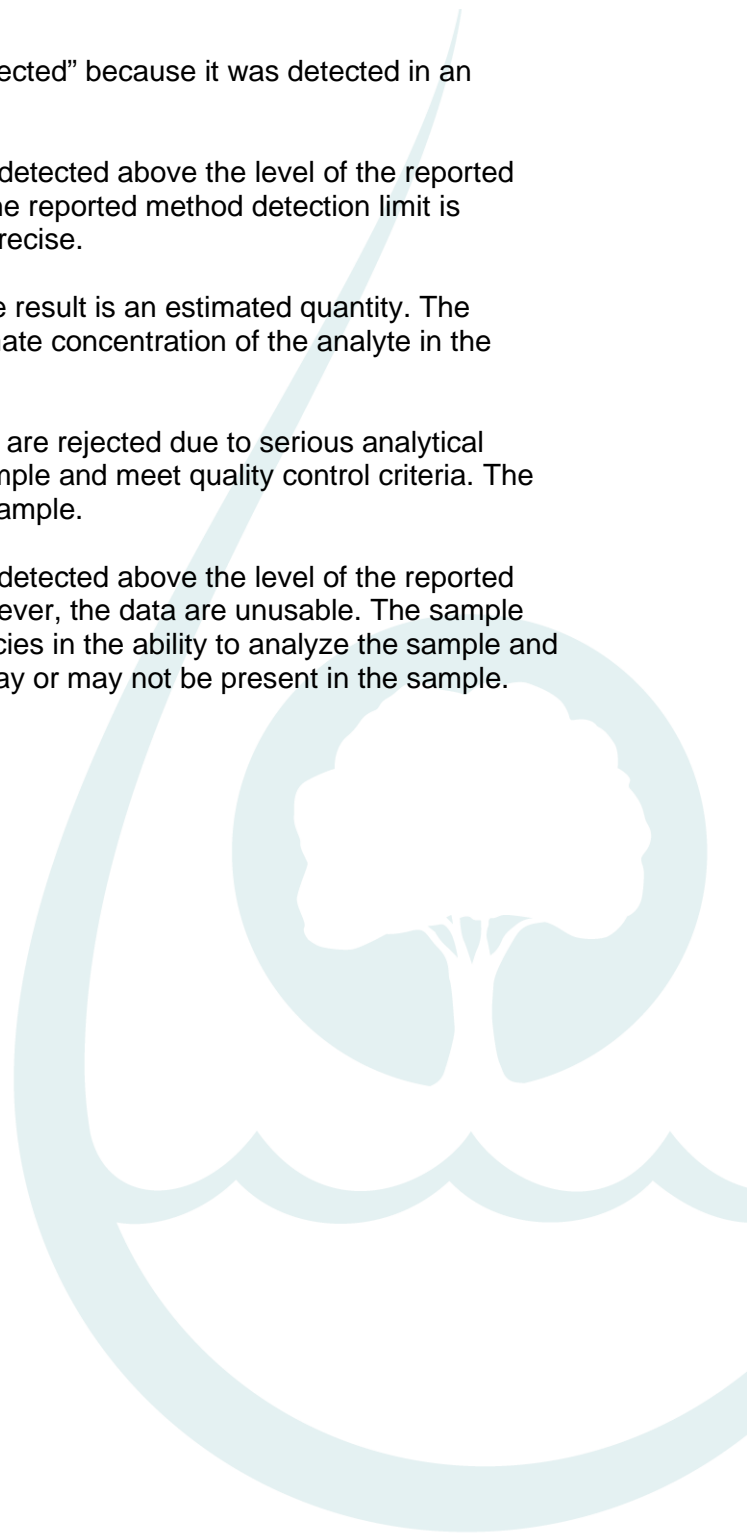
- All radiological results reported below the MDC have been flagged “U.”

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Report prepared by: Abigail P. Roselli, M.S., Quality Assurance Chemist  
 Report reviewed by: Alyssa M. Reed, Senior Quality Assurance Chemist/Project Manager  
 Report approved by: David I. Thal, CEAC, CQA, Principal Chemist  
 Date: 12/4/2019

## **INORGANIC AND RADIOLOGICAL DATA QUALIFIERS**

- U - The analyte was analyzed for, but was not detected above the level of the reported sample reporting/method detection limit.
- U\* - This analyte should be considered “not-detected” because it was detected in an associated blank at a similar level.
- UJ - The analyte was analyzed for, but was not detected above the level of the reported sample reporting/method detection limit. The reported method detection limit is approximate and may be inaccurate or imprecise.
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- R - The data are unusable. The sample results are rejected due to serious analytical deficiencies in the ability to analyze the sample and meet quality control criteria. The analyte may or may not be present in the sample.
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C+	Initial and/or continuing calibration issue. The result may be biased high.
C-	Initial and/or continuing calibration issue. The result may be biased low.
FD	Field duplicate imprecision.
FG	Total versus dissolved imprecision.
H	Holding time exceeded.
I	Internal standard recovery outside of acceptance limits.
L	LCS and LCSD recoveries outside of acceptance limits, indeterminate bias.
L+	LCS and/or LCSD recoveries outside of acceptance limits. The result may be biased high.
L-	LCS and/or LCSD recoveries outside of acceptance limits. The result may be biased low.
LD	Laboratory duplicate imprecision.
LP	LCS/LCSD imprecision.
M	MS and MSD recoveries outside of acceptance limits, indeterminate bias.
M+	MS and/or MSD recoveries outside of acceptance limits. The result may be biased high.
M-	MS and/or MSD recoveries outside of acceptance limits. The result may be biased low.
MP	MS/MSD imprecision.
P	Post-digestion spike recoveries outside of acceptance limits, indeterminate bias.
P+	Post-digestion spike recovery outside of acceptance limits. The result may be biased high.
P-	Post-digestion spike recovery outside of acceptance limits. The result may be biased low.
Q	Chemical preservation issue.
R	RL standards outside of acceptance limits, indeterminate bias.
R+	RL standard(s) outside of acceptance limits. The result may be biased high.
R-	RL standard(s) outside of acceptance limits. The result may be biased low.
T	Temperature preservation issue.
SD	Serial dilution imprecision.
Y	Chemical yields outside of acceptance limits, indeterminate bias.
Y+	Chemical yield(s) outside of acceptance limits. The result may be biased high.
Y-	Chemical yield(s) outside of acceptance limits. The result may be biased low.
ZZ	Other

# APPENDIX A2

## Field Sampling Forms

Product Name: Low-Flow System

Date: 2019-08-27 09:28:10

Project Information:

Operator Name Joe Booth  
Company Name Resolute Env  
Project Name CCR sampling - Aug 2019  
Site Name Plant McManus 819  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613179  
Turbidity Make/Model Lamotte 2020 we

Pump Information:

Pump Model/Type Dedicated  
Tubing Type Idpe  
Tubing Diameter .17 in  
Tubing Length 29 ft

Pump placement from TOC 23.5 ft

Well Information:

Well ID MCM-01  
Well diameter 2 in  
Well Total Depth 28.3 ft  
Screen Length 10 ft  
Depth to Water 7.12 ft

Pumping Information:

Final Pumping Rate 130 mL/min  
Total System Volume 0.6144392 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 0.72 in  
Total Volume Pumped 3.64 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Stabilization									
Last 5	09:07:44	720.02	26.22	5.54	197.06	6.60	7.17	0.37	24.00
Last 5	09:11:44	960.02	26.13	5.55	197.93	5.09	7.18	0.36	22.88
Last 5	09:15:44	1200.02	25.69	5.56	198.92	4.13	7.17	0.31	21.73
Last 5	09:19:44	1440.02	25.38	5.57	199.71	3.87	7.18	0.27	21.73
Last 5	09:23:44	1680.02	25.24	5.58	200.54	2.87	7.18	0.23	22.03
Variance 0			-0.44	0.01	0.99			-0.05	-1.16
Variance 1			-0.32	0.01	0.79			-0.05	0.01
Variance 2			-0.14	0.01	0.84			-0.03	0.30

Notes

Pre-purged 1 liter

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-28 13:30:58

Project Information:

Operator Name Audrey Crafton  
Company Name Resolute Env  
Project Name CCR Sampling-Aug. 2019  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364456  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type peristaltic  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 28 ft

Pump placement from TOC 22.35 ft

Well Information:

Well ID MCM-02  
Well diameter 2 in  
Well Total Depth 27.35 ft  
Screen Length 10 ft  
Depth to Water 6.61 ft

Pumping Information:

Final Pumping Rate 150 mL/min  
Total System Volume 0.2149758 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 1.68 in  
Total Volume Pumped 3 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Stabilization									
Last 5	13:12:35	240.06	21.12	5.08	204.92	0.25	6.74	0.23	108.31
Last 5	13:16:35	480.02	20.76	5.04	202.86	0.31	6.75	0.19	104.13
Last 5	13:20:35	720.02	20.79	5.02	205.50	0.02	6.75	0.17	101.02
Last 5	13:24:35	960.02	20.58	5.00	205.59	0.30	6.75	0.16	98.73
Last 5	13:28:35	1200.02	20.57	4.99	199.38	0.04	6.75	0.15	98.03
Variance 0			0.02	-0.02	2.64			-0.02	-3.12
Variance 1			-0.21	-0.01	0.09			-0.01	-2.29
Variance 2			-0.02	-0.01	-6.22			-0.01	-0.70

Notes

Prepurged 1.0L

Grab Samples

MCM-02  
Metals, Fluoride, Radium

Product Name: Low-Flow System

Date: 2019-08-27 15:49:50

Project Information:

Operator Name Audrey Crafton  
Company Name Resolute Env  
Project Name CCR Sampling-Aug. 2019  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364456  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Peristaltic  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 29 ft

Pump placement from TOC 23.57 ft

Well Information:

Well ID MCM-04  
Well diameter 2 in  
Well Total Depth 28.57 ft  
Screen Length 10 ft  
Depth to Water 12.28 ft

Pumping Information:

Final Pumping Rate 150 mL/min  
Total System Volume 0.2194393 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 1.8 in  
Total Volume Pumped 3 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Stabilization									
Last 5	15:28:09	240.06	20.47	5.14	368.08	4.96	12.49	0.20	70.16
Last 5	15:32:09	480.02	20.14	5.10	361.67	5.61	12.50	0.17	61.42
Last 5	15:36:09	720.02	20.02	5.07	363.87	4.57	12.46	0.17	56.22
Last 5	15:40:09	960.02	20.34	5.06	361.55	3.55	12.45	0.17	53.68
Last 5	15:44:09	1200.02	20.56	5.05	359.59	2.62	12.43	0.16	51.79
Variance 0			-0.12	-0.02	2.20			0.00	-5.20
Variance 1			0.32	-0.01	-2.32			-0.00	-2.54
Variance 2			0.22	-0.01	-1.96			-0.01	-1.88

Notes

Prepurged 1L

Grab Samples

MCM-04  
Metals, Fluoride, Radium

Product Name: Low-Flow System

Date: 2019-08-28 13:13:26

Project Information:

Operator Name Veronica Fay  
Company Name Resolute  
Project Name CCR Sampling  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364452  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Dedicated Pump  
Tubing Type LDPE  
Tubing Diameter 0.17 in  
Tubing Length 29 ft

Pump placement from TOC 23.15 ft

Well Information:

Well ID MCM-05  
Well diameter 2 in  
Well Total Depth 28.05 ft  
Screen Length 10 ft  
Depth to Water 11.15 ft

Pumping Information:

Final Pumping Rate 180 mL/min  
Total System Volume 0.4844393 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 1.92 in  
Total Volume Pumped 9.25 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Last 5	12:50:51	960.02	24.17	6.68	4805.91	0.57	11.28	0.83	-241.12
Last 5	12:54:51	1200.02	24.28	6.68	4770.35	0.47	11.28	0.52	-239.30
Last 5	12:58:51	1440.02	24.44	6.68	4745.07	0.45	11.29	0.34	-240.14
Last 5	13:02:51	1680.02	24.06	6.68	4746.86	0.46	11.30	0.26	-240.13
Last 5	13:06:51	1920.02	24.02	6.69	4743.37	--	--	0.22	-240.37
Variance 0			0.16	-0.00	-25.29			-0.19	-0.84
Variance 1			-0.38	0.00	1.79			-0.07	0.01
Variance 2			-0.05	0.01	-3.49			-0.05	-0.24

Notes

Prepurged 0.75 L

Grab Samples

MCM-05  
Metals  
MCM-05  
Fluoride  
MCM-05  
Radium



DUP-2  
Metals  
DUP-2  
Fluoride  
DUP-2  
Radium



Product Name: Low-Flow System

Date: 2019-08-28 12:29:57

Project Information:

Operator Name Joe Booth  
Company Name Resolute Env  
Project Name CCR sampling - Aug 2019  
Site Name Plant McManus 819  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613179  
Turbidity Make/Model Lamotte 2020 we

Pump Information:

Pump Model/Type Dedicated  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 28 ft

Pump placement from TOC 22.20 ft

Well Information:

Well ID MCM-06  
Well diameter 2 in  
Well Total Depth 27.20 ft  
Screen Length 10 ft  
Depth to Water 10.98 ft

Pumping Information:

Final Pumping Rate 140 mL/min  
Total System Volume 0.6099758 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 2.16 in  
Total Volume Pumped 3.36 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Last 5	12:09:58	480.02	26.08	6.88	24561.87	1.49	11.18	0.71	-261.44
Last 5	12:13:58	720.02	25.42	6.89	25119.27	0.95	11.17	0.54	-260.28
Last 5	12:17:58	960.02	25.55	6.88	25477.10	0.85	11.16	0.38	-265.32
Last 5	12:21:58	1200.02	25.51	6.87	25817.01	0.73	11.16	0.31	-272.33
Last 5	12:25:58	1440.02	25.60	6.87	26043.74	0.49	11.16	0.23	-279.77
Variance 0			0.13	-0.01	357.83			-0.16	-5.04
Variance 1			-0.04	-0.00	339.91			-0.07	-7.01
Variance 2			0.09	-0.01	226.73			-0.07	-7.44

Notes

Pre-purged 1 liter

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-28 10:31:08

Project Information:

Operator Name Joe Booth  
Company Name Resolute Env  
Project Name CCR sampling - Aug 2019  
Site Name Plant McManus 819  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613179  
Turbidity Make/Model Lamotte 2020 we

Pump Information:

Pump Model/Type Dedicated  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 24 ft

Pump placement from TOC 18.5 ft

Well Information:

Well ID MCM-07  
Well diameter 2 in  
Well Total Depth 23.75 ft  
Screen Length 10 ft  
Depth to Water 8.88 ft

Pumping Information:

Final Pumping Rate 120 mL/min  
Total System Volume 0.5921222 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 9.48 in  
Total Volume Pumped 7.68 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Last 5	10:12:35	2880.50	25.15	6.34	22018.00	5.35	9.64	0.10	-13.25
Last 5	10:16:35	3120.50	25.14	6.34	21990.20	5.06	9.64	0.09	-11.52
Last 5	10:20:35	3360.50	25.15	6.35	21951.45	4.93	9.65	0.10	-10.06
Last 5	10:24:35	3600.50	25.20	6.35	22014.40	4.93	9.65	0.09	-8.78
Last 5	10:28:35	3840.50	25.42	6.35	22019.56	4.79	9.66	0.08	-7.92
Variance 0			0.00	0.00	-38.75			0.00	1.46
Variance 1			0.06	0.00	62.95			-0.01	1.28
Variance 2			0.22	0.00	5.16			-0.01	0.86

Notes

Pre-purged 1 liter

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-28 11:22:00

Project Information:

Operator Name Audrey Crafton  
Company Name Resolute Env  
Project Name CCR Sampling-Aug. 2019  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364456  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Peristaltic  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 29 ft

Pump placement from TOC 23.29 ft

Well Information:

Well ID MCM-08  
Well diameter 2 in  
Well Total Depth 28.29 ft  
Screen Length 10 ft  
Depth to Water 5.43 ft

Pumping Information:

Final Pumping Rate 150 mL/min  
Total System Volume 0.2194393 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 8.52 in  
Total Volume Pumped 3 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Stabilization									
Last 5	11:04:01	240.06	22.26	5.08	6330.19	0.76	6.08	0.23	54.26
Last 5	11:08:01	480.02	22.20	5.09	6467.29	0.14	6.11	0.18	48.47
Last 5	11:12:01	720.02	22.04	5.10	6528.72	0.26	6.11	0.16	42.71
Last 5	11:16:01	960.02	21.90	5.10	6586.69	0.16	6.13	0.15	37.51
Last 5	11:20:01	1200.02	21.75	5.11	6598.70	0.40	6.14	0.15	34.03
Variance 0			-0.16	0.01	61.43			-0.02	-5.76
Variance 1			-0.13	0.00	57.97			-0.01	-5.20
Variance 2			-0.15	0.01	12.01			-0.01	-3.48

Notes

Prepurged 1.0L

Grab Samples

MCM-08  
Metals, Fluoride, Radium

Product Name: Low-Flow System

Date: 2019-08-28 09:33:38

Project Information:

Operator Name Audrey Crafton  
Company Name Resolute Env  
Project Name CCR Sampling-Aug. 2019  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364456  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Peristaltic  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 24 ft

Pump placement from TOC 19 ft

Well Information:

Well ID MCM-11  
Well diameter 2 in  
Well Total Depth 24.0 ft  
Screen Length 10 ft  
Depth to Water 4.73 ft

Pumping Information:

Final Pumping Rate 150 mL/min  
Total System Volume 0.1971222 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 15.12 in  
Total Volume Pumped 4.8 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Stabilization									
Last 5	09:15:37	960.03	22.97	4.86	115.07	8.10	5.91	0.20	92.22
Last 5	09:19:37	1200.03	22.94	4.86	115.50	7.00	5.95	0.18	90.22
Last 5	09:23:37	1440.03	22.94	4.87	116.24	4.62	5.96	0.17	89.11
Last 5	09:27:37	1680.03	23.02	4.87	116.20	4.72	5.98	0.16	88.04
Last 5	09:31:37	1920.03	22.94	4.87	116.44	4.74	5.99	0.15	86.61
Variance 0			0.01	0.00	0.74			-0.01	-1.11
Variance 1			0.08	0.01	-0.04			-0.01	-1.07
Variance 2			-0.07	-0.00	0.24			-0.01	-1.44

Notes

Prepurged 1L

Grab Samples

MCM-11  
Metals, Fluoride, Radium

Product Name: Low-Flow System

Date: 2019-08-27 11:35:59

Project Information:

Operator Name Audrey Crafton  
Company Name Resolute Env  
Project Name CCR Sampling-Aug. 2019  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364456  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Dedicated  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 30 ft

Pump placement from TOC 24.0 ft

Well Information:

Well ID MCM-12  
Well diameter 2 in  
Well Total Depth 29.0 ft  
Screen Length 10 ft  
Depth to Water 10.95 ft

Pumping Information:

Final Pumping Rate 140 mL/min  
Total System Volume 0.6189027 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 13.44 in  
Total Volume Pumped 2.8 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Stabilization									
Last 5	11:15:40	240.06	23.78	6.24	2772.06	1.51	11.95	0.14	-84.99
Last 5	11:19:40	480.02	23.94	6.24	2769.29	1.70	11.95	0.12	-86.15
Last 5	11:23:40	720.02	24.17	6.24	2781.52	2.53	11.88	0.05	-84.31
Last 5	11:27:40	960.02	23.24	6.24	2766.89	3.25	11.97	0.06	-79.51
Last 5	11:31:40	1200.02	22.32	6.24	2784.32	4.80	12.07	0.04	-80.03
Variance 0			0.23	-0.00	12.24			-0.06	1.84
Variance 1			-0.93	0.01	-14.63			0.00	4.79
Variance 2			-0.92	-0.00	17.44			-0.02	-0.51

Notes

Prepurged 1L

Grab Samples

MCM-12  
Metals, Fluoride, Radium

Product Name: Low-Flow System

Date: 2019-08-26 15:58:18

Project Information:

Operator Name Audrey Crafton  
Company Name Resolute Env  
Project Name CCR Sampling-Aug. 2019  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364456  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Dedicated  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 28 ft

Pump placement from TOC 23.1 ft

Well Information:

Well ID MCM-14  
Well diameter 2 in  
Well Total Depth 28.1 ft  
Screen Length 10 ft  
Depth to Water 11.63 ft

Pumping Information:

Final Pumping Rate 120 mL/min  
Total System Volume 0.6099758 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 5.64 in  
Total Volume Pumped 2.88 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Stabilization									
Last 5	15:31:42	480.02	23.07	6.62	24988.97	0.52	11.34	0.75	-250.53
Last 5	15:35:42	720.02	23.02	6.62	24951.32	0.15	11.27	0.52	-254.40
Last 5	15:39:42	960.02	22.91	6.62	24908.28	0.13	11.25	0.37	-256.02
Last 5	15:43:42	1200.02	22.96	6.62	24882.97	0.09	11.23	0.28	-257.21
Last 5	15:47:42	1440.02	23.02	6.62	24834.44	0.22	11.16	0.22	-257.34
Variance 0			-0.11	0.00	-43.04			-0.14	-1.62
Variance 1			0.05	0.00	-25.31			-0.09	-1.19
Variance 2			0.06	-0.00	-48.54			-0.07	-0.13

Notes

Prepurged 1L

Grab Samples

MCM-14

**Metals, Fluoride, Radium**

DUP-01

**Metals, Fluoride, Radium**

Product Name: Low-Flow System

Date: 2019-08-27 14:55:45

Project Information:

Operator Name Joe Booth  
Company Name Resolute Env  
Project Name CCR sampling - Aug 2019  
Site Name Plant McManus 819  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613179  
Turbidity Make/Model Lamotte 2020 we

Pump Information:

Pump Model/Type Dedicated  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 27.3 ft

Pump placement from TOC 21.6 ft

Well Information:

Well ID MCM-15  
Well diameter 2 in  
Well Total Depth 26.6 ft  
Screen Length 10 ft  
Depth to Water 11.80 ft

Pumping Information:

Final Pumping Rate 130 mL/min  
Total System Volume 0.6068515 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 1.68 in  
Total Volume Pumped 4.16 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Stabilization									
Last 5	14:36:31	960.91	24.65	5.30	128.91	2.86	11.94	0.24	96.39
Last 5	14:40:31	1200.91	24.65	5.32	131.18	2.49	11.94	0.23	92.37
Last 5	14:44:31	1440.91	24.62	5.33	131.91	2.91	11.93	0.21	90.31
Last 5	14:48:31	1680.91	24.47	5.33	133.07	2.97	11.94	0.21	89.04
Last 5	14:52:31	1920.91	24.47	5.35	136.26	3.77	11.94	0.20	87.64
Variance 0			-0.03	0.01	0.73			-0.02	-2.06
Variance 1			-0.15	0.01	1.16			0.00	-1.27
Variance 2			0.00	0.02	3.19			-0.01	-1.40

Notes

Pre-purged 1liter

Grab Samples



Product Name: Low-Flow System

Date: 2019-08-27 11:45:31

Project Information:

Operator Name Joe Booth  
Company Name Resolute Env  
Project Name CCR sampling - Aug 2019  
Site Name Plant McManus 819  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613179  
Turbidity Make/Model Lamotte 2020 we

Pump Information:

Pump Model/Type Dedicated  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 29 ft

Pump placement from TOC 23.5 ft

Well Information:

Well ID MCM-16  
Well diameter 2 in  
Well Total Depth 28.39 ft  
Screen Length 10 ft  
Depth to Water 11.56 ft

Pumping Information:

Final Pumping Rate 140 mL/min  
Total System Volume 0.6144392 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 0.84 in  
Total Volume Pumped 7.28 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Last 5	11:26:29	2160.04	23.32	4.88	162.54	4.39	11.62	0.62	58.26
Last 5	11:30:29	2400.04	23.25	4.88	162.84	3.79	11.62	0.57	58.35
Last 5	11:34:29	2640.03	23.13	4.88	162.71	3.49	11.62	0.50	58.28
Last 5	11:38:29	2880.04	23.08	4.89	162.84	2.87	11.63	0.47	58.33
Last 5	11:42:29	3120.04	23.03	4.88	162.93	3.11	11.62	0.42	58.77
Variance 0			-0.12	0.00	-0.13			-0.07	-0.07
Variance 1			-0.06	0.01	0.13			-0.04	0.05
Variance 2			-0.04	-0.01	0.09			-0.05	0.45

Notes

Pre-purged 1 liter

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-27 13:07:23

Project Information:

Operator Name Audrey Crafton  
Company Name Resolute Env  
Project Name CCR Sampling-Aug. 2019  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364456  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Dedicated  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 28 ft

Pump placement from TOC 22.44 ft

Well Information:

Well ID MCM-17  
Well diameter 2 in  
Well Total Depth 27.44 ft  
Screen Length 10 ft  
Depth to Water 11.41 ft

Pumping Information:

Final Pumping Rate 150 mL/min  
Total System Volume 0.6099758 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 1.32 in  
Total Volume Pumped 3.9 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Stabilization									
Last 5	12:42:03	240.06	22.35	6.24	9947.23	1.31	11.45	0.19	-159.62
Last 5	12:46:03	480.02	22.08	6.24	9936.18	2.65	11.48	0.16	-162.38
Last 5	12:50:03	720.02	21.78	6.24	10032.59	2.17	11.49	0.14	-163.88
Last 5	12:54:03	960.02	21.59	6.24	10079.18	2.91	11.51	0.12	-165.02
Last 5	12:58:03	1200.02	21.45	6.23	10126.26	2.16	11.52	0.11	-166.61
Variance 0			-0.30	-0.00	96.42			-0.03	-1.50
Variance 1			-0.19	-0.00	46.58			-0.02	-1.14
Variance 2			-0.14	-0.00	47.09			-0.01	-1.59

Notes

Prepurged 1.25 L

Grab Samples

MCM-17  
Metals, Fluoride, Radium

Product Name: Low-Flow System

Date: 2019-10-16 13:30:16

Project Information:

Operator Name Joe Booth  
Company Name Resolute  
Project Name October CCR 2019  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613179  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Dedicated  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 27 ft

Pump placement from TOC 22.32 ft

Well Information:

Well ID MCM-01  
Well diameter 2 in  
Well Total Depth 27.32 ft  
Screen Length 10 ft  
Depth to Water 6.76 ft

Pumping Information:

Final Pumping Rate 145 mL/min  
Total System Volume 0.2105124 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 0.84 in  
Total Volume Pumped 2.9 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Stabilization									
Last 5	13:12:06	240.02	25.87	5.70	201.60	3.60	6.83	0.18	32.14
Last 5	13:16:06	480.02	25.95	5.72	199.11	2.70	6.83	0.19	32.58
Last 5	13:20:06	720.01	25.65	5.72	197.20	2.00	6.83	0.27	33.99
Last 5	13:24:06	960.00	25.70	5.72	198.54	1.92	6.83	0.23	34.90
Last 5	13:28:06	1199.99	25.97	5.72	198.46	1.30	6.83	0.28	35.51
Variance 0			-0.30	0.00	-1.91			0.08	1.41
Variance 1			0.05	0.00	1.35			-0.04	0.91
Variance 2			0.26	-0.00	-0.08			0.05	0.61

Notes

Prepurged 2 liters

Grab Samples

MCM-01  
Metals, anions, TDS, radium

Product Name: Low-Flow System

Date: 2019-10-16 11:12:35

Project Information:

Operator Name Veronica Fay  
Company Name Resolute  
Project Name October 2019 CCR Sampling  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 642531  
Turbidity Make/Model 2020we LaMotte

Pump Information:

Pump Model/Type Peristaltic Pump  
Tubing Type LDPE  
Tubing Diameter 0.17 in  
Tubing Length 29 ft

Pump placement from TOC 22.35 ft

Well Information:

Well ID MCM-02  
Well diameter 2 in  
Well Total Depth 27.35 ft  
Screen Length 10 ft  
Depth to Water 6.71 ft

Pumping Information:

Final Pumping Rate 190 mL/min  
Total System Volume 0.2194393 L  
Calculated Sample Rate 180 sec  
Stabilization Drawdown 2.28 in  
Total Volume Pumped 3.42 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Last 5	10:57:28	360.02	23.26	4.99	196.24	1.08	6.90	0.14	32.60
Last 5	11:00:28	540.02	23.11	4.99	192.55	0.80	6.90	0.13	31.36
Last 5	11:03:28	720.02	23.13	4.98	192.60	0.81	6.90	0.12	31.01
Last 5	11:06:28	900.02	23.18	4.98	190.68	0.50	6.90	0.11	30.11
Last 5	11:09:28	1080.01	23.16	4.98	189.18	0.53	6.90	0.11	29.35
Variance 0			0.02	-0.00	0.05			-0.01	-0.35
Variance 1			0.05	0.00	-1.92			-0.01	-0.90
Variance 2			-0.03	-0.00	-1.50			-0.01	-0.76

Notes

Prepurged 2L  
Well performed well

Grab Samples

MCM-02  
Metals  
MCM-02  
Anions

MCM-02  
TDS  
MCM-02  
Radium



Product Name: Low-Flow System

Date: 2019-10-15 15:07:42

Project Information:

Operator Name Joe Booth  
Company Name Resolute  
Project Name October CCR 2019  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613179  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Peristaltic  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 29 ft

Pump placement from TOC 23 ft

Well Information:

Well ID MCM-04  
Well diameter 2 in  
Well Total Depth 28.57 ft  
Screen Length 10 ft  
Depth to Water 11.26 ft

Pumping Information:

Final Pumping Rate 130 mL/min  
Total System Volume 0.2194393 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 4.08 in  
Total Volume Pumped 2.8 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Stabilization									
Last 5	14:49:34	240.06	21.61	4.89	382.76	0.51	11.60	0.18	68.90
Last 5	14:53:34	480.02	21.60	4.90	377.79	0.52	11.61	0.16	66.22
Last 5	14:57:34	720.00	21.57	4.89	378.90	0.78	11.62	0.14	64.92
Last 5	15:01:34	960.00	21.55	4.89	377.13	0.57	11.63	0.13	64.40
Last 5	15:05:34	1199.99	21.53	4.89	379.68	0.54	11.63	0.12	64.27
Variance 0			-0.03	-0.00	1.11			-0.01	-1.30
Variance 1			-0.01	-0.00	-1.77			-0.01	-0.52
Variance 2			-0.03	-0.00	2.55			-0.00	-0.13

Notes

Prepurged 2 liters

Grab Samples

MCM-04 Metals, anions, TDS, radium

Product Name: Low-Flow System

Date: 2019-10-16 15:24:27

Project Information:

Operator Name Joe Booth  
Company Name Resolute  
Project Name October CCR 2019  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613179  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Dedicated  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 28 ft

Pump placement from TOC 23.05 ft

Well Information:

Well ID MCM-05  
Well diameter 2 in  
Well Total Depth 28.05 ft  
Screen Length 10 ft  
Depth to Water 10.19 ft

Pumping Information:

Final Pumping Rate 150 mL/min  
Total System Volume 0.2149758 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 3.84 in  
Total Volume Pumped 3 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Last 5	15:05:55	240.02	24.59	6.62	4985.06	0.35	10.47	0.23	-43.26
Last 5	15:09:55	480.02	24.38	6.63	5006.68	0.23	10.48	0.11	-46.44
Last 5	15:13:55	720.01	24.60	6.63	5015.36	0.43	10.47	0.08	-49.23
Last 5	15:17:55	960.00	24.54	6.63	5025.38	0.28	10.51	0.08	-50.24
Last 5	15:21:55	1200.00	24.35	6.64	5030.49	0.30	10.51	0.09	-49.96
Variance 0			0.22	0.00	8.68			-0.02	-2.78
Variance 1			-0.06	0.00	10.02			0.00	-1.01
Variance 2			-0.19	0.00	5.11			0.00	0.28

Notes

Prepurged 2 liters

Grab Samples

MCM-05  
Metals, anions, TDS, radium  
DUP - 2  
Metals, anions, TDS, radium

Product Name: Low-Flow System

Date: 2019-10-17 10:53:35

Project Information:

Operator Name Veronica Fay  
Company Name Resolute  
Project Name October 2019 CCR Sampling  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 642531  
Turbidity Make/Model 2020we LaMotte

Pump Information:

Pump Model/Type QED Dedicated  
Tubing Type LDPE  
Tubing Diameter 0.17 in  
Tubing Length 29 ft

Pump placement from TOC 22.2 ft

Well Information:

Well ID MCM-06  
Well diameter 2 in  
Well Total Depth 27.2 ft  
Screen Length 10 ft  
Depth to Water 9.8 ft

Pumping Information:

Final Pumping Rate 150 mL/min  
Total System Volume 0.4844393 L  
Calculated Sample Rate 180 sec  
Stabilization Drawdown 0 in  
Total Volume Pumped 3.2 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Stabilization									
Last 5	10:38:02	540.02	23.16	6.86	24309.89	1.78	9.80	0.09	-383.01
Last 5	10:41:02	720.01	23.30	6.86	24494.54	2.27	9.75	0.09	-387.56
Last 5	10:44:02	900.01	23.37	6.86	24571.73	2.36	9.73	0.09	-390.51
Last 5	10:47:02	1080.01	23.25	6.86	24687.48	2.12	9.72	0.09	-392.38
Last 5	10:50:02	1260.01	23.34	6.86	24862.54	2.05	9.70	0.09	-394.14
Variance 0			0.07	-0.00	77.19			-0.00	-2.95
Variance 1			-0.12	-0.00	115.75			-0.00	-1.87
Variance 2			0.09	-0.00	175.06			-0.00	-1.76

Notes

Prepurged 1L  
Well performed well. Well tidally influences. Felt the effects of incoming high tide.

Grab Samples

MCM-06  
Metals  
MCM-06  
Anions



MCM-06  
TDS  
MCM-06  
Radium

Product Name: Low-Flow System

Date: 2019-10-17 10:57:24

Project Information:

Operator Name Joe Booth  
Company Name Resolute  
Project Name October CCR 2019  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613179  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Dedicated  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 23.75 ft

Pump placement from TOC 18.75 ft

Well Information:

Well ID MCM-07  
Well diameter 2 in  
Well Total Depth 23.75 ft1  
Screen Length 0 ft  
Depth to Water 9.18 ft

Pumping Information:

Final Pumping Rate 110 mL/min  
Total System Volume 0.1960063 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 4.08 in  
Total Volume Pumped 4.2 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Stabilization									
Last 5	10:37:57	960.00	24.78	6.39	23063.51	6.95	9.80	0.05	12.39
Last 5	10:41:57	1199.99	24.82	6.40	22911.55	5.62	9.75	0.04	13.45
Last 5	10:45:57	1439.99	24.83	6.40	22921.42	4.21	9.52	0.05	13.93
Last 5	10:49:57	1679.98	24.87	6.40	22894.26	4.42	9.52	0.05	14.48
Last 5	10:53:57	1919.97	24.93	6.40	22819.83	4.61	9.52	0.05	15.38
Variance 0			0.01	0.00	9.86			0.01	0.48
Variance 1			0.04	-0.00	-27.15			0.00	0.55
Variance 2			0.06	0.00	-74.43			0.00	0.90

Notes

Prepurged 2 liters

Grab Samples

MCM-07  
Metals, anions, TDS, radium

Product Name: Low-Flow System

Date: 2019-10-16 15:21:10

Project Information:

Operator Name Veronica Fay  
Company Name Resolute  
Project Name October 2019 CCR Sampling  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 642531  
Turbidity Make/Model 2020we LaMotte

Pump Information:

Pump Model/Type Peristaltic Pump  
Tubing Type LDPE  
Tubing Diameter 0.17 in  
Tubing Length 30 ft

Pump placement from TOC 23.29 ft

Well Information:

Well ID MCM-08  
Well diameter 2 in  
Well Total Depth 28.29 ft  
Screen Length 10 ft  
Depth to Water 6.07 ft

Pumping Information:

Final Pumping Rate 140 mL/min  
Total System Volume 0.2239027 L  
Calculated Sample Rate 180 sec  
Stabilization Drawdown 9.48 in  
Total Volume Pumped 3.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Stabilization									
Last 5	15:05:16	180.02	25.27	5.22	7239.21	0.72	6.77	0.16	93.09
Last 5	15:08:16	360.02	25.21	5.22	7195.60	0.58	6.81	0.15	86.59
Last 5	15:11:16	540.02	25.18	5.23	7032.78	0.76	6.83	0.13	81.35
Last 5	15:14:16	720.02	25.05	5.23	6998.98	0.61	6.85	0.12	77.53
Last 5	15:17:16	900.02	25.07	5.23	7018.50	0.47	6.86	0.11	74.41
Variance 0			-0.03	0.01	-162.81			-0.02	-5.24
Variance 1			-0.13	-0.00	-33.81			-0.01	-3.82
Variance 2			0.02	0.00	19.52			-0.01	-3.12

Notes

Prepurged 1L  
Well performed well

Grab Samples

MCM-08  
Metals  
MCM-08  
Anions

MCM-08  
TDS  
MCM-08  
Radium



Product Name: Low-Flow System

Date: 2019-10-16 13:45:37

Project Information:

Operator Name Veronica Fay  
Company Name Resolute  
Project Name October 2019 CCR Sampling  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 642531  
Turbidity Make/Model 2020we LaMotte

Pump Information:

Pump Model/Type Peristaltic Pump  
Tubing Type LDPE  
Tubing Diameter 0.17 in  
Tubing Length 25 ft

Pump placement from TOC 19 ft

Well Information:

Well ID MCM-11  
Well diameter 2 in  
Well Total Depth 24 ft  
Screen Length 10 ft  
Depth to Water 5.56 ft

Pumping Information:

Final Pumping Rate 155 mL/min  
Total System Volume 0.2015856 L  
Calculated Sample Rate 180 sec  
Stabilization Drawdown 14.4 in  
Total Volume Pumped 3.25 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Stabilization									
Last 5	13:29:57	540.02	27.36	5.05	118.39	11.40	6.72	0.15	44.61
Last 5	13:32:57	720.02	27.41	5.05	117.70	5.13	6.73	0.13	44.70
Last 5	13:35:57	900.02	27.46	5.05	117.34	2.55	6.75	0.12	44.89
Last 5	13:38:57	1080.01	27.44	5.04	117.37	2.06	6.76	0.12	45.21
Last 5	13:41:57	1260.01	27.50	5.05	117.41	1.85	6.76	0.11	45.46
Variance 0			0.05	-0.00	-0.36			-0.01	0.19
Variance 1			-0.02	-0.00	0.02			-0.01	0.33
Variance 2			0.07	0.00	0.04			-0.01	0.25

Notes

Prepurged 2L  
Well performed well

Grab Samples

MCM-11  
Metals  
MCM-11  
Anions

MCM-11  
TDS  
MCM-11  
Radium



Product Name: Low-Flow System

Date: 2019-10-15 15:04:43

Project Information:

Operator Name Veronica Fay  
Company Name Resolute  
Project Name October 2019 CCR Sampling  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 642531  
Turbidity Make/Model 2020we LaMotte

Pump Information:

Pump Model/Type QED Dedicated  
Tubing Type LDPE  
Tubing Diameter 0.17 in  
Tubing Length 30 ft

Pump placement from TOC 24 ft

Well Information:

Well ID MCM-12  
Well diameter 2 in  
Well Total Depth 29.0 ft  
Screen Length 10 ft  
Depth to Water 10.75 ft

Pumping Information:

Final Pumping Rate 150 mL/min  
Total System Volume 0.4889027 L  
Calculated Sample Rate 180 sec  
Stabilization Drawdown 16.8 in  
Total Volume Pumped 4.05 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Stabilization									
Last 5	14:47:58	900.01	23.70	6.18	2850.37	1.34	12.10	0.02	93.57
Last 5	14:50:58	1080.01	23.70	6.18	2854.93	1.23	12.10	0.02	92.07
Last 5	14:53:58	1260.01	23.70	6.19	2856.91	1.49	12.13	0.02	90.75
Last 5	14:56:58	1440.01	23.65	6.19	2860.51	1.64	12.13	0.02	89.34
Last 5	14:59:58	1620.01	23.62	6.19	2864.64	1.56	12.15	0.02	87.94
Variance 0			-0.00	0.00	1.99			-0.00	-1.32
Variance 1			-0.05	0.00	3.60			0.00	-1.41
Variance 2			-0.03	0.00	4.13			0.00	-1.40

Notes

Prepurged 1L  
Well performed well

Grab Samples

MCM-12  
Metals  
MCM-12  
Anion

MCM-12  
TDS  
MCM-12  
Radium





Product Name: Low-Flow System

Date: 2019-10-15 16:18:48

Project Information:

Operator Name Veronica Fay  
Company Name Resolute  
Project Name October 2019 CCR Sampling  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 642531  
Turbidity Make/Model 2020we LaMotte

Pump Information:

Pump Model/Type QED Dedicated  
Tubing Type LDPE  
Tubing Diameter 0.17 in  
Tubing Length 29 ft

Pump placement from TOC 23.11 ft

Well Information:

Well ID MCM-14  
Well diameter 2 in  
Well Total Depth 28.11 ft  
Screen Length 10 ft  
Depth to Water 12.06 ft

Pumping Information:

Final Pumping Rate 160 mL/min  
Total System Volume 0.4844393 L  
Calculated Sample Rate 180 sec  
Stabilization Drawdown 0.6 in  
Total Volume Pumped 4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Stabilization									
Last 5	16:02:11	360.02	23.74	6.54	25034.06	0.25	12.11	0.43	-102.74
Last 5	16:05:11	540.02	23.71	6.55	25040.06	0.14	12.11	0.28	-142.78
Last 5	16:08:11	720.02	23.67	6.57	25036.46	0.10	12.11	0.16	-181.03
Last 5	16:11:11	900.01	23.63	6.58	25043.76	0.12	12.11	0.12	-210.91
Last 5	16:14:11	1080.01	23.61	6.58	25061.18	0.10	12.11	0.11	-226.00
Variance 0			-0.04	0.01	-3.61			-0.12	-38.25
Variance 1			-0.04	0.01	7.30			-0.04	-29.88
Variance 2			-0.02	0.01	17.43			-0.01	-15.09

Notes

Prepurged 0.5 L  
Well performed well

Grab Samples

MCM-14  
Metals  
MCM-14  
Anions

MCM-14  
TDS  
MCM-14  
Radium  
DUP-1  
Metals  
DUP-1  
Anion  
DUP-1  
TDS  
DUP-1  
Radium

Product Name: Low-Flow System

Date: 2019-10-15 16:29:23

Project Information:

Operator Name Joe Booth  
Company Name Resolute  
Project Name October CCR 2019  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613179  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Dedicated  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 25 ft

Pump placement from TOC 21.67 ft

Well Information:

Well ID MCM-15  
Well diameter 2 in  
Well Total Depth 26.60 ft  
Screen Length 10 ft  
Depth to Water 11.23 ft

Pumping Information:

Final Pumping Rate 140 mL/min  
Total System Volume 0.2015856 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 2.52 in  
Total Volume Pumped 3.92 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Stabilization									
Last 5	16:11:07	720.01	23.58	5.32	121.65	1.73	11.41	0.25	42.57
Last 5	16:15:07	960.00	23.52	5.32	120.91	2.06	11.41	0.23	39.60
Last 5	16:19:07	1199.99	23.44	5.32	122.93	2.00	11.43	0.21	38.32
Last 5	16:23:07	1439.99	23.43	5.32	125.94	2.31	11.43	0.19	37.15
Last 5	16:27:07	1679.98	23.39	5.32	127.77	2.65	11.44	0.17	35.72
Variance 0			-0.08	-0.01	2.02			-0.02	-1.27
Variance 1			-0.01	0.00	3.01			-0.02	-1.17
Variance 2			-0.04	-0.00	1.84			-0.01	-1.43

Notes

Prepurged 2 liters

Grab Samples

MCM-15  
Metals, anions, TDS, radium

Product Name: Low-Flow System

Date: 2019-10-16 09:47:06

Project Information:

Operator Name Veronica Fay  
Company Name Resolute  
Project Name October 2019 CCR Sampling  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 642531  
Turbidity Make/Model 2020we LaMotte

Pump Information:

Pump Model/Type QED Dedicated  
Tubing Type LDPE  
Tubing Diameter 0.17 in  
Tubing Length 30 ft

Pump placement from TOC 23.39 ft

Well Information:

Well ID MCM-16  
Well diameter 2 in  
Well Total Depth 28.38 ft  
Screen Length 10 ft  
Depth to Water 11.39 ft

Pumping Information:

Final Pumping Rate 140 mL/min  
Total System Volume 0.4889027 L  
Calculated Sample Rate 180 sec  
Stabilization Drawdown 0.6 in  
Total Volume Pumped 6 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Last 5	09:31:08	1080.01	22.13	4.87	158.76	3.26	11.43	0.73	41.33
Last 5	09:34:08	1260.01	22.27	4.88	159.79	2.39	11.43	0.23	40.54
Last 5	09:37:08	1440.01	22.30	4.89	159.55	1.54	11.44	0.21	38.62
Last 5	09:40:08	1620.01	22.31	4.89	158.35	1.55	11.44	0.18	37.37
Last 5	09:43:08	1800.01	22.31	4.89	159.02	1.09	11.44	0.17	36.00
Variance 0			0.03	0.01	-0.24			-0.02	-1.93
Variance 1			0.01	-0.00	-1.20			-0.04	-1.24
Variance 2			0.01	0.01	0.67			-0.01	-1.38

Notes

Prepurged 0.5 L

Well performed well. MP-50 had some issue regulating pressure. Pump rate dropped below 100 ml/min at 0926. Adjusted rate to 170ml/min

Grab Samples

MCM-16  
Metals  
MCM-16  
Anions

MCM-16  
TDS  
MCM-16  
Radium



Product Name: Low-Flow System

Date: 2019-10-16 10:37:44

Project Information:

Operator Name Joe Booth  
Company Name Resolute  
Project Name October CCR 2019  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613179  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Dedicated  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 28 ft

Pump placement from TOC 22.44 ft

Well Information:

Well ID MCM-17  
Well diameter 2 in  
Well Total Depth 27.44 ft  
Screen Length 10 ft  
Depth to Water 10.98 ft

Pumping Information:

Final Pumping Rate 130 mL/min  
Total System Volume 0.2149758 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 0 in  
Total Volume Pumped 10.92 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Stabilization									
Last 5	10:18:26	4079.92	24.33	6.49	12393.19	6.49	10.98	0.08	25.35
Last 5	10:22:26	4319.91	24.38	6.50	12473.06	5.29	10.98	0.08	25.11
Last 5	10:26:26	4559.90	24.41	6.52	12535.20	4.14	10.98	0.07	24.90
Last 5	10:30:26	4799.90	24.55	6.53	12662.60	4.40	10.98	0.04	24.87
Last 5	10:34:26	5039.89	24.81	6.54	12735.25	4.53	10.98	0.04	24.88
Variance 0			0.03	0.02	62.14			-0.01	-0.21
Variance 1			0.14	0.01	127.40			-0.03	-0.03
Variance 2			0.26	0.01	72.65			-0.00	0.01

Notes

Prepurged 2 liters

Grab Samples

MCM-17  
Metals, anions, TDS, radium

Product Name: Low-Flow System

Date: 2019-11-20 15:10:06

Project Information:

Operator Name Kevin Stephenson  
Company Name Resolute Env  
Project Name Additional Sampling  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 541714  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Dedicated Bladder  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 28 ft

Pump placement from TOC 22.32 ft

Well Information:

Well ID MCM-01  
Well diameter 2 in  
Well Total Depth 27.32 ft  
Screen Length 10 ft  
Depth to Water 5.61 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.6049758 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 0 in  
Total Volume Pumped 5.6 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 10		+/- 0.2	+/- 1000%
Last 5	14:52:02	720.02	24.04	5.80	199.71	2.46	5.62	1.06	90.41
Last 5	14:56:02	960.02	23.99	5.79	199.36	1.76	5.62	0.77	92.65
Last 5	15:00:02	1200.02	23.85	5.79	200.41	1.43	5.61	0.63	81.85
Last 5	15:04:02	1440.02	23.95	5.79	200.74	1.23	5.61	0.50	84.75
Last 5	15:08:02	1680.02	23.94	5.77	201.22	0.58	5.61	0.29	92.75
Variance 0			-0.14	0.00	1.06			-0.15	-10.80
Variance 1			0.09	-0.01	0.32			-0.13	2.90
Variance 2			-0.00	-0.02	0.49			-0.21	8.00

Notes

Pre-purged 2.5 liters

Grab Samples

MCM-01  
Metals  
MCM-01  
Radium

Product Name: Low-Flow System

Date: 2019-11-19 15:48:16

Project Information:

Operator Name Kevin Stephenson  
Company Name Resolute Env  
Project Name Additional Sampling  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 541714  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type GeoTech Peristaltic  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 28 ft

Pump placement from TOC 22.40 ft

Well Information:

Well ID MCM-02  
Well diameter 2 in  
Well Total Depth 27.40 ft  
Screen Length 10 ft  
Depth to Water 5.47 ft

Pumping Information:

Final Pumping Rate 240 mL/min  
Total System Volume 0.2149758 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 2.52 in  
Total Volume Pumped 5.76 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 10		+/- 0.2	+/- 1000%
Stabilization									
Last 5	15:30:15	480.02	21.43	5.15	211.68	0.02	5.68	0.10	80.13
Last 5	15:34:15	720.02	21.42	5.13	212.50	0.03	5.68	0.09	87.62
Last 5	15:38:15	960.02	21.40	5.13	208.56	0.06	5.68	0.08	82.91
Last 5	15:42:15	1200.02	21.35	5.12	200.82	0.05	5.68	0.08	91.46
Last 5	15:46:16	1441.02	21.35	5.11	199.55	0.07	5.68	0.07	90.68
Variance 0			-0.03	-0.01	-3.94			-0.01	-4.71
Variance 1			-0.05	-0.01	-7.74			-0.00	8.55
Variance 2			-0.00	-0.01	-1.27			-0.00	-0.78

Notes

Pre-purged 2 liters.

Grab Samples

MCM-02  
Metals  
MCM-02  
Radium



Product Name: Low-Flow System

Date: 2019-11-20 09:22:29

Project Information:

Operator Name Kevin Stephenson  
Company Name Resolute Env  
Project Name Additional Sampling  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 541714  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type GeoTech Peristaltic  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 29 ft

Pump placement from TOC 23.40 ft

Well Information:

Well ID MCM-04  
Well diameter 2 in  
Well Total Depth 28.40 ft  
Screen Length 10 ft  
Depth to Water 10.52 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.2194393 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 3.6 in  
Total Volume Pumped 4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 10		+/- 0.2	+/- 1000%
Last 5	09:02:41	240.12	19.38	5.02	418.61	1.00	10.78	0.16	87.60
Last 5	09:06:41	480.02	19.57	5.02	416.35	1.47	10.80	0.15	90.31
Last 5	09:10:42	720.85	19.74	5.02	416.68	1.03	10.81	0.14	91.73
Last 5	09:14:42	960.85	20.01	5.02	415.59	1.23	10.81	0.12	94.56
Last 5	09:18:42	1200.85	20.06	5.03	415.40	0.71	10.82	0.13	94.59
Variance 0			0.18	0.00	0.33			-0.01	1.42
Variance 1			0.27	0.00	-1.09			-0.01	2.82
Variance 2			0.04	0.01	-0.19			0.01	0.03

Notes

Pre-purged 1.5 liters.

Grab Samples

MCM-04  
Metals  
MCM-04  
Radium

Product Name: Low-Flow System

Date: 2019-11-20 11:14:01

Project Information:

Operator Name Kevin Stephenson  
Company Name Resolute Env  
Project Name Additional Sampling  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 541714  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Dedicated Bladder  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 28 ft

Pump placement from TOC 23.10 ft

Well Information:

Well ID MCM-05  
Well diameter 2 in  
Well Total Depth 28.10 ft  
Screen Length 10 ft  
Depth to Water 10.12 ft

Pumping Information:

Final Pumping Rate 240 mL/min  
Total System Volume 0.6049758 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 0 in  
Total Volume Pumped 4.8 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 10		+/- 0.2	+/- 1000%
Last 5	10:56:51	240.08	22.82	6.56	4799.18	0.21	10.12	0.24	9.02
Last 5	11:00:50	480.02	22.60	6.57	4810.03	0.14	10.12	0.16	-4.02
Last 5	11:04:50	720.02	22.38	6.58	4814.73	0.09	10.12	0.14	-1.20
Last 5	11:08:50	960.02	22.59	6.58	4827.41	0.06	10.12	0.12	2.67
Last 5	11:12:50	1200.02	22.64	6.58	4822.27	0.11	10.12	0.10	5.92
Variance 0			-0.22	0.00	4.70			-0.02	2.82
Variance 1			0.22	0.00	12.67			-0.02	3.87
Variance 2			0.05	0.00	-5.14			-0.01	3.26

Notes

Pre-purged 1 liter

Grab Samples

MCM-05  
Metals  
MCM-05  
Radium

Product Name: Low-Flow System

Date: 2019-11-20 13:39:40

Project Information:

Operator Name Kevin Stephenson  
Company Name Resolute Env  
Project Name Additional Sampling  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 541714  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Dedicated Bladder  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 24 ft

Pump placement from TOC 18.55 ft

Well Information:

Well ID MCM-07  
Well diameter 2 in  
Well Total Depth 23.55 ft  
Screen Length 10 ft  
Depth to Water 8.78 ft

Pumping Information:

Final Pumping Rate 240 mL/min  
Total System Volume 0.5871222 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 4.8 in  
Total Volume Pumped 4.8 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 10		+/- 0.2	+/- 1000%
Stabilization									
Last 5	13:18:04	240.08	24.96	6.25	26610.17	0.56	9.16	0.12	34.04
Last 5	13:22:04	480.02	24.76	6.26	26728.94	0.54	9.18	0.10	32.12
Last 5	13:26:04	720.21	24.88	6.26	26717.05	0.46	9.17	0.09	28.36
Last 5	13:30:04	960.21	24.71	6.26	26649.84	0.40	9.18	0.08	23.04
Last 5	13:34:04	1200.21	24.67	6.27	26673.22	0.43	9.18	0.09	20.58
Variance 0			0.12	0.00	-11.89			-0.01	-3.77
Variance 1			-0.16	0.00	-67.21			-0.01	-5.32
Variance 2			-0.05	0.00	23.38			0.01	-2.46

Notes

Pre-purged 2 liters.

Grab Samples

MCM-06  
Metals  
MCM-07  
Inorganics  
MCM-07  
Radium

MCM-07  
Metals



Product Name: Low-Flow System

Date: 2019-11-19 13:52:08

Project Information:

Operator Name Kevin Stephenson  
Company Name Resolute Env  
Project Name Additional Sampling  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 541714  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type GeoTech Peristaltic  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 29 ft

Pump placement from TOC 23.29 ft

Well Information:

Well ID MCM-08  
Well diameter 2 in  
Well Total Depth 28.29 ft  
Screen Length 10 ft  
Depth to Water 5.07 ft

Pumping Information:

Final Pumping Rate 250 mL/min  
Total System Volume 0.2194393 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 9 in  
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 10		+/- 0.2	+/- 1000%
Last 5	13:34:27	240.83	22.74	5.29	6912.93	0.12	5.79	0.11	83.48
Last 5	13:38:27	480.77	22.47	5.29	7018.32	0.11	5.81	0.11	83.52
Last 5	13:42:27	720.77	22.38	5.29	7097.76	0.15	5.81	0.11	83.97
Last 5	13:46:27	960.77	22.33	5.29	7139.78	0.10	5.80	0.10	82.91
Last 5	13:50:27	1200.77	22.38	5.29	7209.98	0.10	5.82	0.09	83.43
Variance 0			-0.10	-0.00	79.44			-0.01	0.45
Variance 1			-0.05	-0.00	42.01			-0.00	-1.07
Variance 2			0.05	-0.00	70.20			-0.01	0.52

Notes

Pre-purged 2.5 liters

Grab Samples

MCM-08  
Metals  
MCM-08  
Radium  
Dup-1  
Metals

Dup-1  
Radium



Product Name: Low-Flow System

Date: 2019-11-21 08:34:01

Project Information:

Operator Name Kevin Stephenson  
Company Name Resolute Env  
Project Name Additional Sampling  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 541714  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Dedicated Bladder  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 29 ft

Pump placement from TOC 23.11 ft

Well Information:

Well ID MCM-14  
Well diameter 2 in  
Well Total Depth 28.11 ft  
Screen Length 10 ft  
Depth to Water 11.30 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.6094393 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 1.8 in  
Total Volume Pumped 4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 10		+/- 0.2	+/- 1000%
Stabilization									
Last 5	08:12:55	240.11	21.40	6.67	26749.84	0.10	11.41	0.27	47.04
Last 5	08:16:55	480.02	21.53	6.67	26496.46	0.06	11.43	0.23	45.48
Last 5	08:20:55	720.02	21.62	6.67	26308.11	0.02	11.45	0.20	44.87
Last 5	08:24:55	960.02	21.76	6.67	26168.81	0.09	11.44	0.16	42.47
Last 5	08:28:55	1200.02	21.70	6.67	26056.95	0.06	11.45	0.14	40.56
Variance 0			0.08	-0.00	-188.35			-0.03	-0.61
Variance 1			0.14	0.00	-139.30			-0.05	-2.40
Variance 2			-0.06	-0.00	-111.86			-0.02	-1.91

Notes

Pre-purged 1 liter

Grab Samples

MCM-14  
Metals  
MCM-14  
Inorganics  
MCM-14  
Radium

Product Name: Low-Flow System

Date: 2019-11-21 11:28:42

Project Information:

Operator Name Kevin Stephenson  
Company Name Resolute Env  
Project Name Additional Sampling  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 541714  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Dedicated Bladder  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 28 ft

Pump placement from TOC 22.44 ft

Well Information:

Well ID MCM-17  
Well diameter 2 in  
Well Total Depth 27.44 ft  
Screen Length 10 ft  
Depth to Water 10.40 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.6049758 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 2.28 in  
Total Volume Pumped 16.8 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 10		+/- 0.2	+/- 1000%
Stabilization									
Last 5	11:08:23	4082.70	23.14	6.40	12719.26	5.81	10.59	0.02	27.03
Last 5	11:12:23	4322.70	23.14	6.41	12807.88	5.43	10.58	0.01	26.74
Last 5	11:16:23	4562.70	23.22	6.42	12850.18	4.98	10.59	0.01	26.68
Last 5	11:20:23	4802.70	23.23	6.43	12905.90	4.67	10.58	0.01	26.38
Last 5	11:24:23	5042.70	23.14	6.44	12936.77	4.55	10.59	0.01	26.02
Variance 0			0.08	0.01	42.30			-0.00	-0.06
Variance 1			0.00	0.01	55.72			-0.00	-0.31
Variance 2			-0.09	0.01	30.87			-0.00	-0.35

Notes

Pre-purged 1 liter

Grab Samples

MCM-17  
Metals  
MCM-17  
Inorganics  
MCM-17  
Radium



Product Name: Low-Flow System

Date: 2019-11-07 13:27:45

Project Information:

Operator Name Kevin Stephenson  
Company Name Resolute Env  
Project Name Background Sampling  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 647057  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type GeoTech Peristaltic  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 28 ft

Pump placement from TOC 22.86 ft

Well Information:

Well ID MCM-18  
Well diameter 2 in  
Well Total Depth 27.86 ft  
Screen Length 10 ft  
Depth to Water 6.25 ft

Pumping Information:

Final Pumping Rate 300 mL/min  
Total System Volume 0.2149758 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 3.24 in  
Total Volume Pumped 6 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 10		+/- 0.2	+/- 1000%
Last 5	13:10:14	240.21	23.77	4.26	7546.40	1.72	6.47	0.08	227.59
Last 5	13:14:14	480.16	23.37	4.25	7583.23	1.37	6.49	0.08	219.86
Last 5	13:18:14	720.15	23.47	4.25	7540.33	1.36	6.50	0.07	214.39
Last 5	13:22:14	960.15	23.51	4.25	7539.57	1.31	6.51	0.06	210.13
Last 5	13:26:14	1200.15	23.30	4.25	7549.04	1.18	6.52	0.06	206.32
Variance 0			0.11	-0.00	-42.90			-0.01	-5.47
Variance 1			0.04	-0.00	-0.76			-0.00	-4.26
Variance 2			-0.22	-0.00	9.47			-0.00	-3.81

Notes

Pre-purged 2 liters.

Grab Samples

MCM-18  
Metals  
MCM-18  
Inorganics  
MCM-18  
Radium

Product Name: Low-Flow System

Date: 2019-11-07 08:54:13

Project Information:

Operator Name Kevin Stephenson  
Company Name Resolute Env  
Project Name Background Sampling  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 647057  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type GeoTech Peristaltic  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 29 ft

Pump placement from TOC 23.32 ft

Well Information:

Well ID MCM-19  
Well diameter 2 in  
Well Total Depth 28.32 ft  
Screen Length 10 ft  
Depth to Water 6.12 ft

Pumping Information:

Final Pumping Rate 250 mL/min  
Total System Volume 0.2194393 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 5.2 in  
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 10		+/- 0.2	+/- 1000%
Stabilization									
Last 5	08:36:41	240.11	21.98	5.19	18754.99	6.03	6.50	0.11	133.70
Last 5	08:40:41	480.02	21.93	5.20	18847.91	4.90	6.52	0.10	132.72
Last 5	08:44:41	720.70	21.91	5.20	18804.68	4.75	6.54	0.09	131.49
Last 5	08:48:41	960.69	21.94	5.21	18859.96	3.89	6.55	0.08	130.57
Last 5	08:52:41	1200.69	21.96	5.21	18881.56	3.61	6.57	0.08	129.67
Variance 0			-0.02	0.01	-43.22			-0.01	-1.23
Variance 1			0.03	0.00	55.28			-0.01	-0.92
Variance 2			0.02	0.00	21.60			-0.00	-0.90

Notes

Pre-purged 3 liters.

Grab Samples

MCM-19 Dup-1  
Metals Metals  
MCM-19 Dup-1  
Inorganics Inorganics  
MCM-19 Dup-1  
Radium Radium

Product Name: Low-Flow System

Date: 2019-11-07 10:59:51

Project Information:

Operator Name Kevin Stephenson  
Company Name Resolute Env  
Project Name Background Sampling  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 647057  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type GeoTech Peristaltic  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 23 ft

Pump placement from TOC 18.05 ft

Well Information:

Well ID MCM-20  
Well diameter 2 in  
Well Total Depth 23.05 ft  
Screen Length 10 ft  
Depth to Water 8.44 ft

Pumping Information:

Final Pumping Rate 250 mL/min  
Total System Volume 0.1926587 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 8.04 in  
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 10		+/- 0.2	+/- 1000%
Stabilization									
Last 5	10:42:39	240.08	23.64	3.72	22919.16	7.87	9.09	0.44	269.26
Last 5	10:46:39	480.02	23.55	3.73	22952.67	6.20	9.09	0.44	309.09
Last 5	10:50:39	720.02	23.61	3.75	22934.08	4.33	9.10	0.44	318.96
Last 5	10:54:39	960.02	23.59	3.77	22930.27	4.15	9.10	0.43	320.00
Last 5	10:58:39	1200.02	23.55	3.79	22948.20	3.91	9.11	0.44	317.85
Variance 0			0.07	0.02	-18.60			-0.01	9.87
Variance 1			-0.02	0.02	-3.81			-0.00	1.04
Variance 2			-0.04	0.01	17.93			0.01	-2.15

Notes

Pre-purged 5 liters.

Grab Samples

MCM-20  
Metals  
MCM-20  
Inorganics  
MCM-20  
Radium

Product Name: Low-Flow System

Date: 2019-11-18 15:07:37

Project Information:

Operator Name Kevin Stephenson  
Company Name Resolute Env  
Project Name Background Sampling  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 541714  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type GeoTech Peristaltic  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 28 ft

Pump placement from TOC 22.86 ft

Well Information:

Well ID MCM-18  
Well diameter 2 in  
Well Total Depth 27.86 ft  
Screen Length 10 ft  
Depth to Water 4.88 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.2149758 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 2.76 in  
Total Volume Pumped 4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 10		+/- 0.2	+/- 1000%
Last 5	14:50:18	240.08	22.40	4.09	7612.71	4.65	5.04	0.16	125.37
Last 5	14:54:18	480.02	22.15	4.09	7534.96	4.67	5.08	0.09	125.70
Last 5	14:58:18	720.02	22.05	4.10	7472.68	3.64	5.09	0.09	124.97
Last 5	15:02:18	960.02	22.01	4.11	7498.97	2.77	5.10	0.08	123.80
Last 5	15:06:18	1200.02	21.97	4.12	7486.89	2.53	5.11	0.07	122.48
Variance 0			-0.10	0.01	-62.29			-0.01	-0.74
Variance 1			-0.04	0.01	26.30			-0.01	-1.17
Variance 2			-0.04	0.01	-12.08			-0.00	-1.32

Notes

Pre-purged 3 liters.

Grab Samples

MCM-18  
Metals  
MCM-18  
Inorganics  
MCM-18  
Radium

Product Name: Low-Flow System

Date: 2019-11-19 09:34:33

Project Information:

Operator Name Kevin Stephenson  
Company Name Resolute Env  
Project Name Background Sampling  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 541714  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type GeoTech Peristaltic  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 29 ft

Pump placement from TOC 32.32 ft

Well Information:

Well ID MCM-19  
Well diameter 2 in  
Well Total Depth 28.32 ft  
Screen Length 10 ft  
Depth to Water 6.63 ft

Pumping Information:

Final Pumping Rate 240 mL/min  
Total System Volume 0.2194393 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 2.64 in  
Total Volume Pumped 4.8 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 10		+/- 0.2	+/- 1000%
Stabilization									
Last 5	09:16:05	240.08	20.01	5.14	18503.37	0.35	6.84	0.14	96.60
Last 5	09:20:06	480.73	20.55	5.14	17860.12	0.43	6.84	0.11	97.91
Last 5	09:24:06	720.72	20.81	5.14	17839.94	0.15	6.85	0.10	98.11
Last 5	09:28:06	960.72	20.82	5.15	17883.71	0.20	6.85	0.09	98.46
Last 5	09:32:06	1200.72	20.86	5.15	17746.14	0.15	6.85	0.08	98.47
Variance 0			0.27	-0.00	-20.18			-0.01	0.19
Variance 1			0.01	0.01	43.77			-0.01	0.35
Variance 2			0.04	0.00	-137.57			-0.01	0.01

Notes

Pre-purged 2 liters

Grab Samples

MCM-18  
Metals  
MCM-18  
Inorganics  
MCM-19  
Radium

Product Name: Low-Flow System

Date: 2019-11-19 10:56:28

Project Information:

Operator Name Kevin Stephenson  
Company Name Resolute Env  
Project Name Background Sampling  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 541714  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type GeoTech Peristaltic  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 23 ft

Pump placement from TOC 18.05 ft

Well Information:

Well ID MCM-20  
Well diameter 2 in  
Well Total Depth 23.05 ft  
Screen Length 10 ft  
Depth to Water 7.62 ft

Pumping Information:

Final Pumping Rate 240 mL/min  
Total System Volume 0.1926587 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 2.64 in  
Total Volume Pumped 4.8 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 10		+/- 0.2	+/- 1000%
Stabilization									
Last 5	10:38:48	240.08	23.05	3.80	22807.83	7.00	7.83	0.11	112.92
Last 5	10:42:48	480.02	23.05	3.79	22925.12	6.87	7.84	0.10	113.32
Last 5	10:46:48	720.02	23.14	3.79	22908.73	4.17	7.84	0.09	112.73
Last 5	10:50:48	960.02	22.99	3.79	22877.70	3.13	7.84	0.08	111.86
Last 5	10:54:48	1200.02	22.91	3.78	22920.93	3.20	7.84	0.08	111.31
Variance 0			0.09	-0.00	-16.39			-0.01	-0.58
Variance 1			-0.15	-0.00	-31.03			-0.01	-0.88
Variance 2			-0.07	-0.00	43.23			-0.01	-0.54

Notes

Pre-purged 2.75 liters.

Grab Samples

MCM-20  
Metals  
MCM-20  
Inorganics  
MCM-20  
Radium

Product Name: Low-Flow System

Date: 2019-12-05 15:59:18

Project Information:

Operator Name Kevin Stephenson  
Company Name Resolute Env  
Project Name Background Sampling  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 541714  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type GeoTech Peristaltic  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 28 ft

Pump placement from TOC 22.86 ft

Well Information:

Well ID MCM-18  
Well diameter 2 in  
Well Total Depth 27.86 ft  
Screen Length 10 ft  
Depth to Water 6.60 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.2149758 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 0.96 in  
Total Volume Pumped 4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 10		+/- 0.2	+/- 1000%
Last 5	15:42:14	240.12	20.95	4.16	7459.62	4.23	6.61	0.54	106.07
Last 5	15:46:14	480.02	20.90	4.17	7400.50	4.22	6.70	0.52	106.19
Last 5	15:50:14	720.02	20.77	4.17	7401.84	4.30	6.69	0.52	106.35
Last 5	15:54:14	960.02	20.77	4.17	7422.47	2.45	6.68	0.43	106.23
Last 5	15:58:14	1200.02	20.70	4.17	7397.30	2.04	6.68	0.42	105.73
Variance 0			-0.13	0.00	1.34			-0.01	0.16
Variance 1			-0.00	0.00	20.62			-0.09	-0.12
Variance 2			-0.07	0.00	-25.17			-0.01	-0.50

Notes

Pre-purged 2 liters

Grab Samples

MCM-18  
Metals  
MCM-18  
Inorganics  
MCM-18  
Radium

Product Name: Low-Flow System

Date: 2019-12-04 14:53:39

Project Information:

Operator Name Kevin Stephenson  
Company Name Resolute Env  
Project Name Background Sampling  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 541714  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type GeoTech Peristaltic  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 29 ft

Pump placement from TOC 23.32 ft

Well Information:

Well ID MCM-19  
Well diameter 2 in  
Well Total Depth 28.32 ft  
Screen Length 10 ft  
Depth to Water 6.38 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.2194393 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 0.86 in  
Total Volume Pumped 4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 10		+/- 0.2	+/- 1000%
Stabilization									
Last 5	14:36:11	240.08	20.41	5.27	19563.94	4.30	6.47	0.15	60.88
Last 5	14:40:11	480.02	20.41	5.27	19542.66	4.19	6.47	0.13	61.52
Last 5	14:44:11	720.02	20.41	5.27	19466.46	2.83	6.46	0.11	61.80
Last 5	14:48:11	960.02	20.46	5.28	19488.84	2.77	6.45	0.10	62.07
Last 5	14:52:11	1200.02	20.36	5.28	19449.52	2.27	6.45	0.10	62.48
Variance 0			0.00	0.00	-76.20			-0.01	0.28
Variance 1			0.05	0.00	22.39			-0.01	0.27
Variance 2			-0.09	0.00	-39.33			-0.00	0.41

Notes

Pre-purged 1 liter.

Grab Samples

MCM-19  
Metals  
MCM-19  
Inorganics  
MCM-19  
Radium



Dup-1  
Metals  
Dup-1  
Inorganics  
Dup-1  
Radium



Product Name: Low-Flow System

Date: 2019-12-04 16:07:17

Project Information:

Operator Name Kevin Stephenson  
Company Name Resolute Env  
Project Name Background Sampling  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 541714  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type GeoTech Peristaltic  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 23 ft

Pump placement from TOC 18.05 ft

Well Information:

Well ID MCM-20  
Well diameter 2 in  
Well Total Depth 23.05 ft  
Screen Length 10 ft  
Depth to Water 7.16 ft

Pumping Information:

Final Pumping Rate 220 mL/min  
Total System Volume 0.1926587 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 7.08 in  
Total Volume Pumped 4.4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 1000%	+/- 0.1	+/- 5%	+/- 10		+/- 0.2	+/- 1000%
Stabilization									
Last 5	15:50:23	240.08	20.70	3.85	22867.12	6.41	7.68	0.16	67.76
Last 5	15:54:23	480.02	20.92	3.86	22686.92	3.54	7.69	0.14	69.09
Last 5	15:58:23	720.02	21.03	3.86	22662.18	3.36	7.71	0.13	70.25
Last 5	16:02:23	960.02	21.04	3.87	22631.42	2.37	7.73	0.12	71.09
Last 5	16:06:23	1200.02	21.10	3.87	22649.12	2.30	7.75	0.11	71.42
Variance 0			0.11	0.00	-24.74			-0.01	1.15
Variance 1			0.00	0.00	-30.75			-0.01	0.85
Variance 2			0.07	0.00	17.69			-0.01	0.33

Notes

Pre-purged 1 liter

Grab Samples

MCM-20  
Metals  
MCM-20  
Inorganics  
MCM-20  
Radium

Product Name: Low-Flow System

Date: 2019-12-18 09:10:52

Project Information:

Operator Name Kevin Stephenson  
Company Name Resolute Environmental  
Project Name CCR Background  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 642533  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type GeoTech Peristaltic  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 28 ft

Pump placement from TOC 22.86 ft

Well Information:

Well ID MCM-18  
Well diameter 2 in  
Well Total Depth 27.86 ft  
Screen Length 10 ft  
Depth to Water 6.20 ft

Pumping Information:

Final Pumping Rate 220 mL/min  
Total System Volume 0.2149758 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 2.64 in  
Total Volume Pumped 4.4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 0.2	+/- 1000
Last 5	08:52:33	240.03	17.77	4.21	7501.45	3.45	6.37	0.16	95.58
Last 5	08:56:33	479.99	18.34	4.21	7345.54	3.86	6.40	0.13	95.72
Last 5	09:00:33	719.98	18.53	4.20	7341.38	3.80	6.40	0.11	96.86
Last 5	09:04:33	959.97	18.56	4.20	7353.34	2.54	6.41	0.10	97.74
Last 5	09:08:33	1199.95	18.63	4.20	7326.55	2.63	6.42	0.10	98.50
Variance 0			0.19	-0.00	-4.17			-0.02	1.14
Variance 1			0.03	-0.01	11.96			-0.01	0.88
Variance 2			0.07	-0.00	-26.79			-0.00	0.76

Notes

Pre-purged 1 liter

Grab Samples

MCM-18  
Metals  
MCM-18  
Inorganics  
MCM-18  
Radium

Product Name: Low-Flow System

Date: 2019-12-17 07:54:47

Project Information:

Operator Name Kevin Stephenson  
Company Name Resolute Environmental  
Project Name CCR Background  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 642533  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type GeoTech Peristaltic  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 30 ft

Pump placement from TOC 23.32 ft

Well Information:

Well ID MCM-19  
Well diameter 2 in  
Well Total Depth 28.32 ft  
Screen Length 10 ft  
Depth to Water 7.20 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.2239027 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 3 in  
Total Volume Pumped 4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 0.2	+/- 1000
Last 5	07:34:55	240.03	21.24	4.93	19057.67	6.70	7.43	0.15	144.06
Last 5	07:38:55	479.99	21.28	4.94	18651.35	4.91	7.43	0.13	141.40
Last 5	07:42:55	719.98	21.29	4.94	18732.50	4.78	7.44	0.12	139.93
Last 5	07:46:55	959.96	21.33	4.96	18633.99	4.37	7.44	0.11	139.01
Last 5	07:50:55	1199.95	21.36	4.96	18550.57	4.28	7.45	0.10	137.96
Variance 0			0.01	0.01	81.15			-0.01	-1.47
Variance 1			0.04	0.01	-98.51			-0.01	-0.91
Variance 2			0.04	0.00	-83.41			-0.01	-1.05

Notes

Pre-purged 2 liters

Grab Samples

MCM-19  
Metals  
MCM-19  
Inorganics  
MCM-19  
Radium

Dup-1  
Metals  
Dup-1  
Inorganics  
Dup-1  
Radium



Product Name: Low-Flow System

Date: 2019-12-18 08:07:00

Project Information:

Operator Name Kevin Stephenson  
Company Name Resolute Environmental  
Project Name CCR Background  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 642533  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type GeoTech Peristaltic  
Tubing Type LDPE  
Tubing Diameter .17 in  
Tubing Length 23.0 ft

Pump placement from TOC 18.05 ft

Well Information:

Well ID MCM-20  
Well diameter 2 in  
Well Total Depth 23.05 ft  
Screen Length 10 ft  
Depth to Water 8.04 ft

Pumping Information:

Final Pumping Rate 220 mL/min  
Total System Volume 0.1926587 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 7.44 in  
Total Volume Pumped 5.28 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 0.2	+/- 1000
Last 5	07:48:19	479.99	19.60	3.74	22942.16	9.52	8.62	0.18	133.30
Last 5	07:52:19	719.98	19.64	3.75	22849.99	6.19	8.64	0.13	133.77
Last 5	07:56:19	959.97	19.77	3.75	22895.43	4.56	8.64	0.12	134.26
Last 5	08:00:19	1199.95	19.86	3.75	22835.84	4.01	8.66	0.11	135.06
Last 5	08:04:19	1439.94	20.03	3.76	22777.62	2.85	8.66	0.10	135.54
Variance 0			0.13	0.00	45.45			-0.01	0.50
Variance 1			0.09	0.00	-59.59			-0.01	0.79
Variance 2			0.17	0.00	-58.22			-0.01	0.49

Notes

Pre-purged 1 liter

Grab Samples

MCM-20  
Metals  
MCM-20  
Inorganics  
MCM-20  
Radium

# APPENDIX B

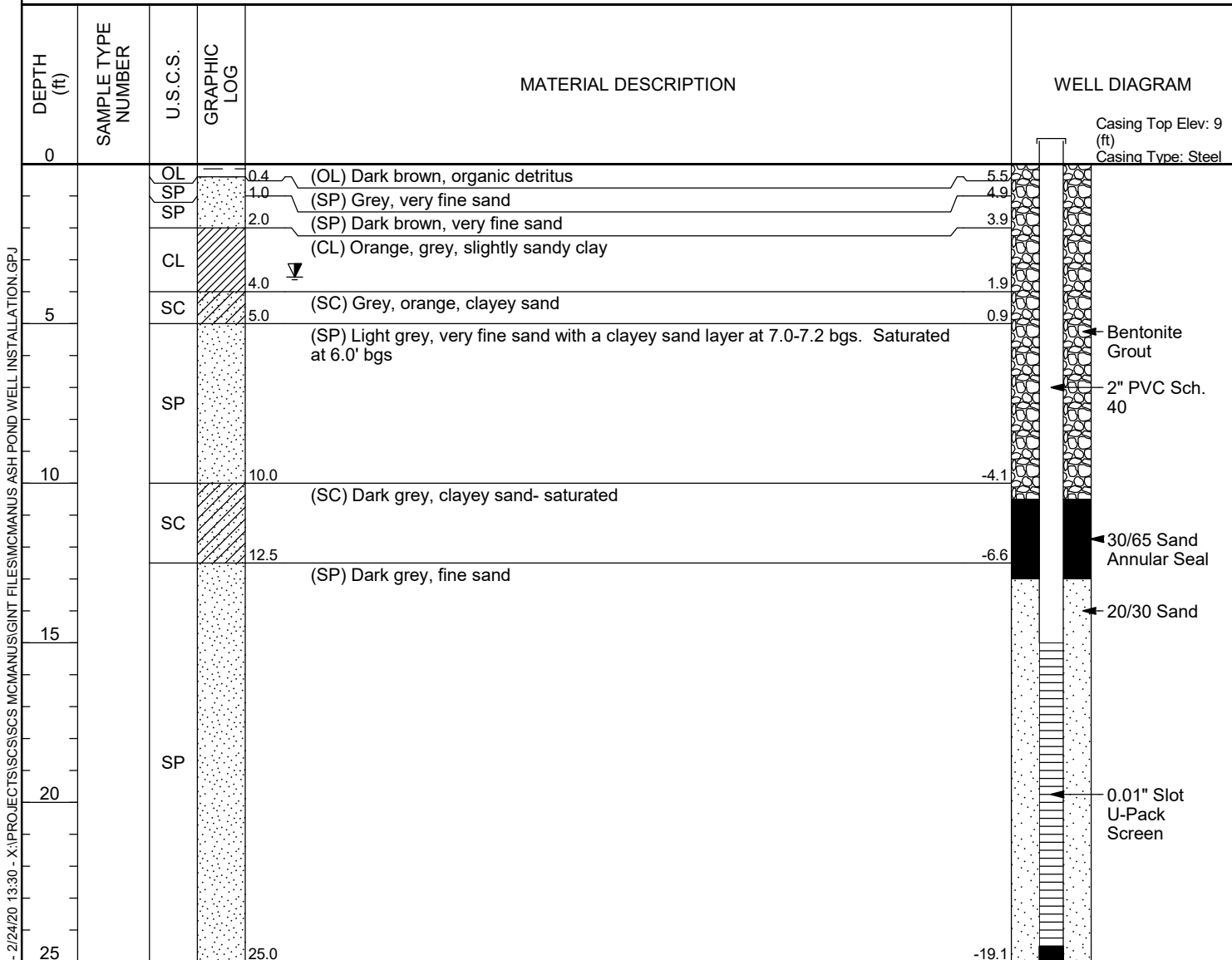
## Boring Logs and Well Construction Forms



Resolute Environmental & Water Resources Consulting  
 1003 Weatherstone PKWY, Suite 320  
 Woodstock, GA 30188  
 Telephone: 6783989942  
 Fax: 8888818219

# WELL NUMBER MCM-18

**CLIENT** Southern Company Services **PROJECT NAME** Plant McManus  
**PROJECT NUMBER** N/A **PROJECT LOCATION** Brunswick, GA  
**DATE STARTED** 10/30/19 **COMPLETED** 10/30/19 **GROUND ELEVATION** 5.9 ft NAVD 88 **HOLE SIZE** 12 inches  
**DRILLING CONTRACTOR** Cascade Drilling, L.P. **GROUND WATER LEVELS:**  
**DRILLING METHOD** Hollow Stem Auger (HSA) **AT TIME OF DRILLING** ---  
**LOGGED BY** Veronica Fay **CHECKED BY** Joe Booth **AT END OF DRILLING** ---  
**NOTES** ▼ AFTER DRILLING 3.54 ft / Elev 2.36 ft immediately before developing



Bottom of borehole at 25.0 feet.

GENERAL.BH / TP / WELL - GINT STD US LAB.GDT - 2/24/20 13:30 - X:\PROJECTS\SCS\SCS MCMANUS\GINT FILES\MCMANUS ASH POND WELL INSTALLATION.GPJ

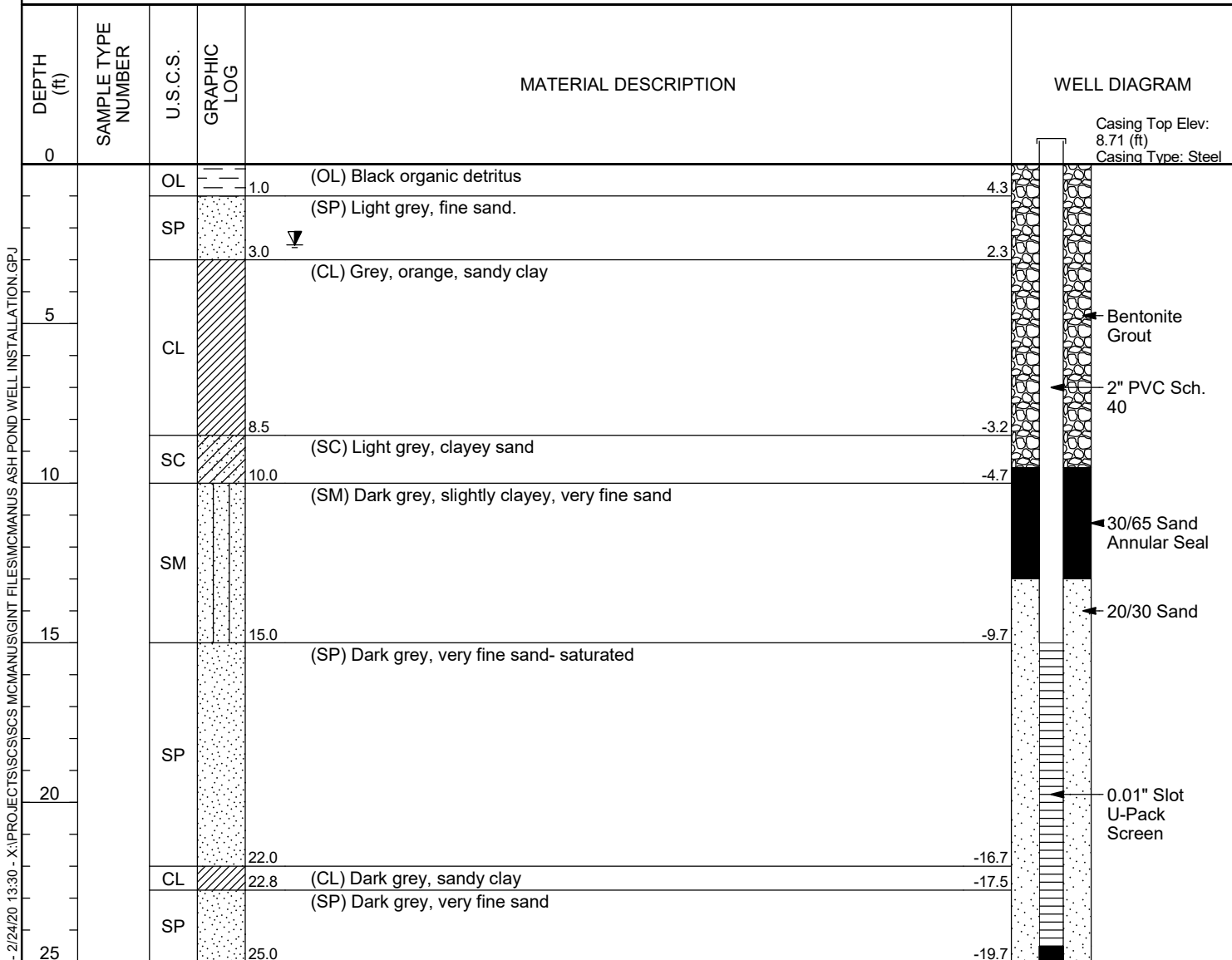




Resolute Environmental & Water Resources Consulting  
 1003 Weatherstone PKWY, Suite 320  
 Woodstock, GA 30188  
 Telephone: 6783989942  
 Fax: 8888818219

# WELL NUMBER MCM-19

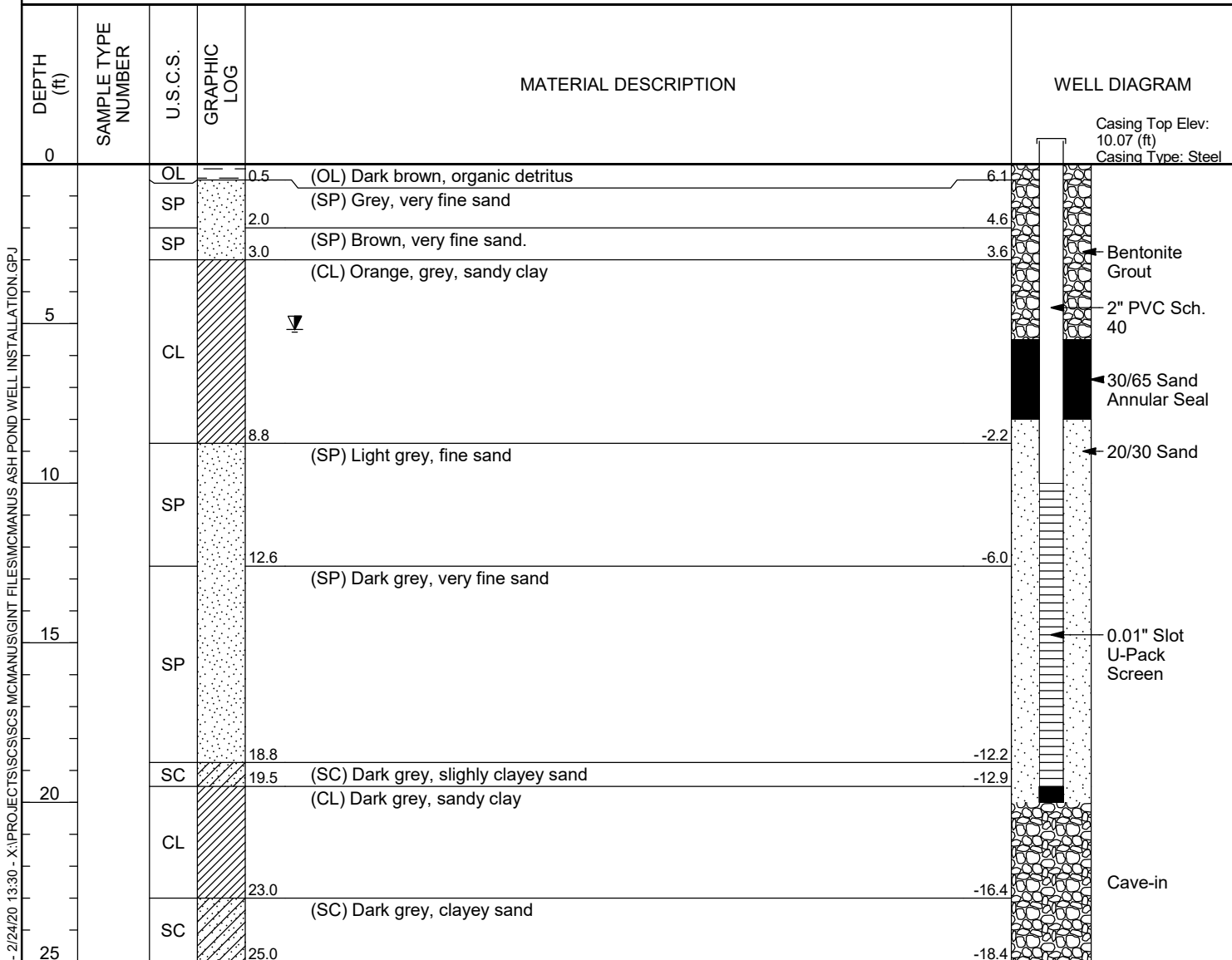
**CLIENT** Southern Company Services **PROJECT NAME** Plant McManus  
**PROJECT NUMBER** N/A **PROJECT LOCATION** Brunswick, GA  
**DATE STARTED** 10/30/19 **COMPLETED** 10/30/19 **GROUND ELEVATION** 5.3 ft NAVD 88 **HOLE SIZE** 12 inches  
**DRILLING CONTRACTOR** Cascade Drilling, L.P. **GROUND WATER LEVELS:**  
**DRILLING METHOD** Hollow Stem Auger (HSA) **AT TIME OF DRILLING** ---  
**LOGGED BY** Veronica Fay **CHECKED BY** Joe Booth **AT END OF DRILLING** ---  
**NOTES** ▼ AFTER DRILLING 2.53 ft / Elev 2.77 ft immediately before developing



Bottom of borehole at 25.0 feet.

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 2/24/20 13:30 - X:\PROJECTS\SCS\MCMANUS\GINT FILES\MCMANUS ASH POND WELL INSTALLATION.GPJ

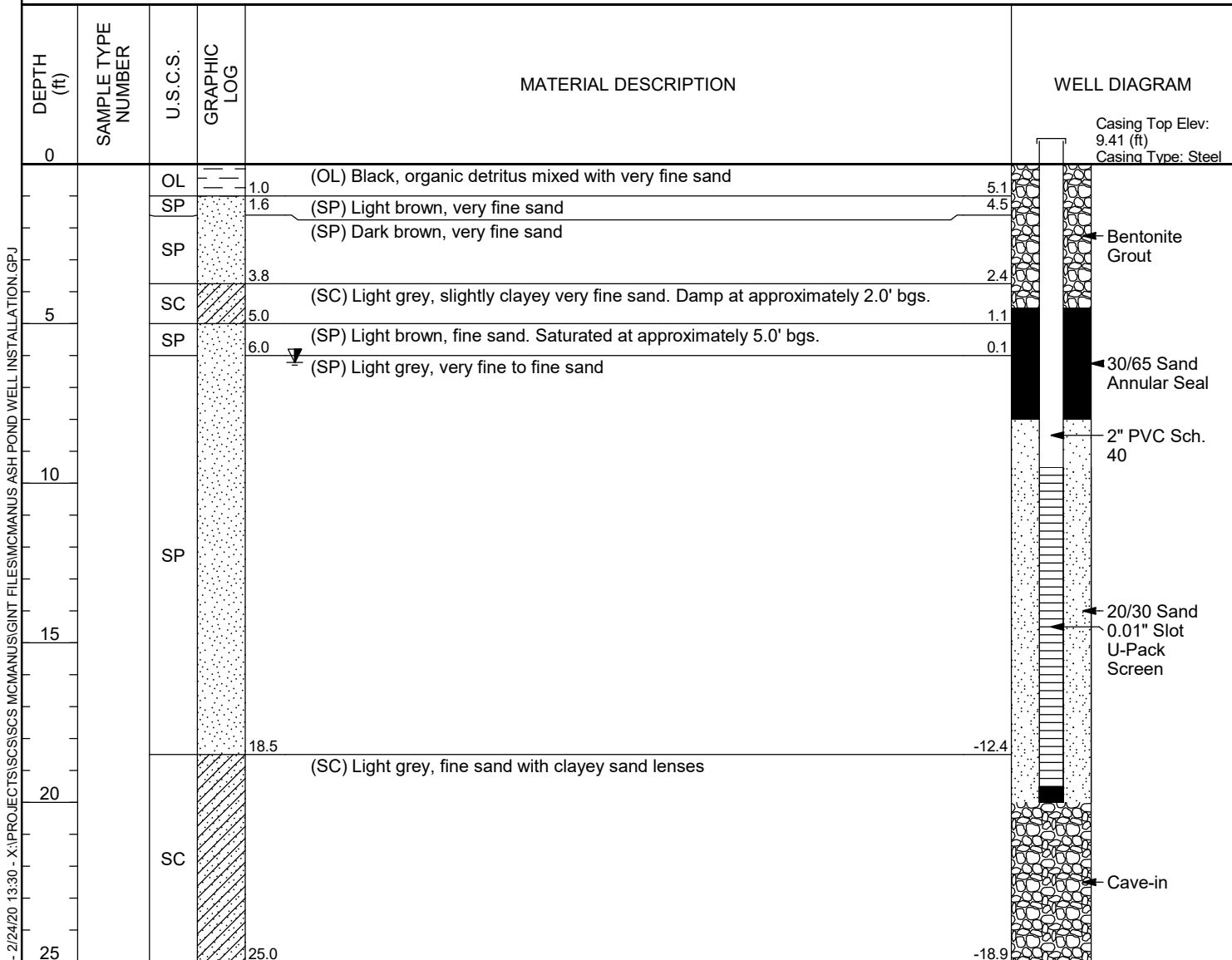
**CLIENT** Southern Company Services **PROJECT NAME** Plant McManus  
**PROJECT NUMBER** N/A **PROJECT LOCATION** Brunswick, GA  
**DATE STARTED** 10/30/19 **COMPLETED** 10/30/19 **GROUND ELEVATION** 6.6 ft NAVD 88 **HOLE SIZE** 12 inches  
**DRILLING CONTRACTOR** Cascade Drilling, L.P. **GROUND WATER LEVELS:**  
**DRILLING METHOD** Hollow Stem Auger (HSA) **AT TIME OF DRILLING** ---  
**LOGGED BY** Veronica Fay **CHECKED BY** Joe Booth **AT END OF DRILLING** ---  
**NOTES** ▼ AFTER DRILLING 5.18 ft / Elev 1.42 ft immediately before developing



Bottom of borehole at 25.0 feet.

GENERAL.BH / TP / WELL - GINT STD US LAB.GDT - 2/24/20 13:30 - X:\PROJECTS\SCS\SCS MCMANUS\GINT FILES\MCMANUS ASH POND WELL INSTALLATION.GPJ

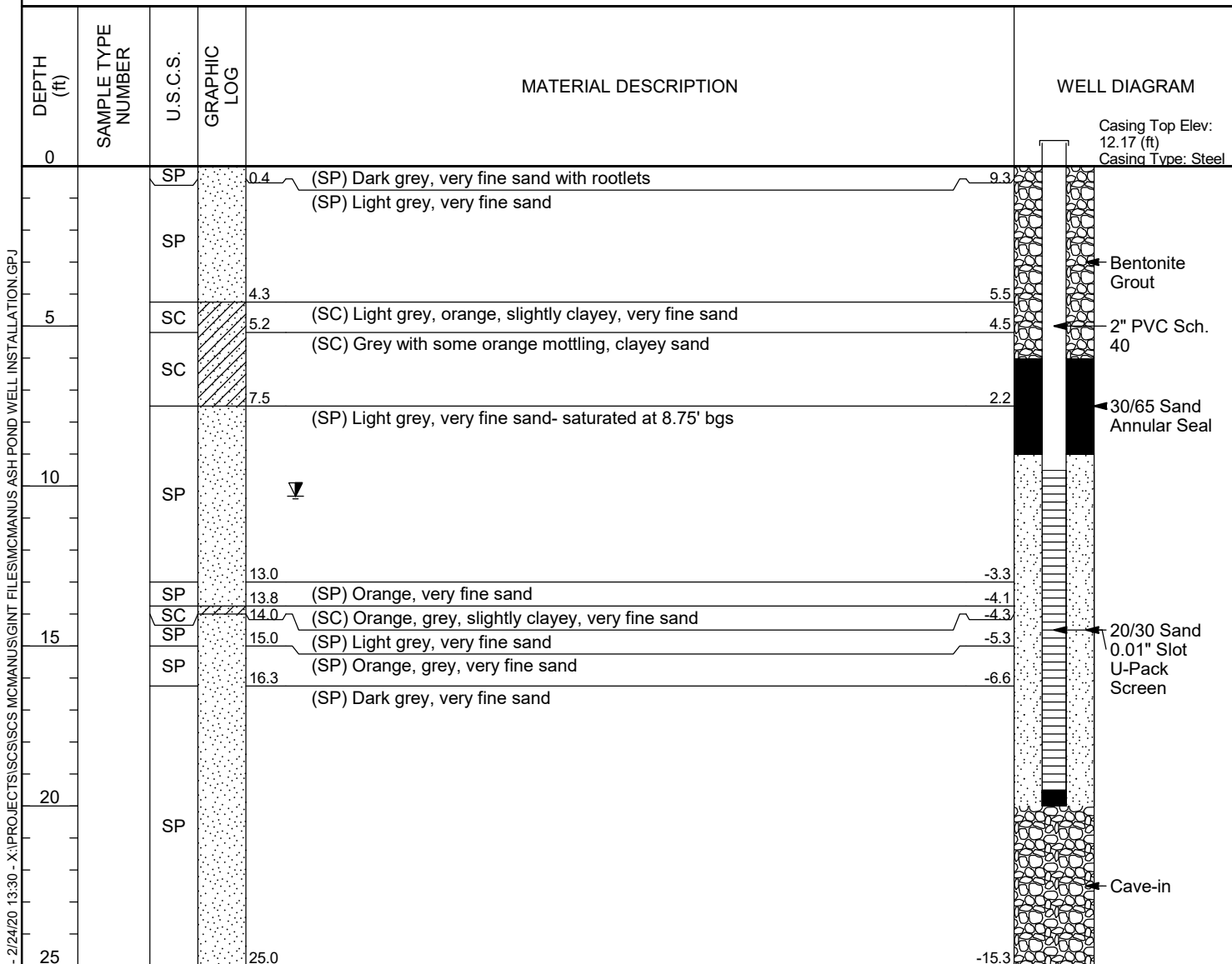
**CLIENT** Southern Company Services **PROJECT NAME** Plant McManus  
**PROJECT NUMBER** N/A **PROJECT LOCATION** Brunswick, GA  
**DATE STARTED** 10/31/19 **COMPLETED** 10/31/19 **GROUND ELEVATION** 6.1 ft NAVD 88 **HOLE SIZE** 12 inches  
**DRILLING CONTRACTOR** Cascade Drilling, L.P. **GROUND WATER LEVELS:**  
**DRILLING METHOD** Hollow Stem Auger (HSA) **AT TIME OF DRILLING** ---  
**LOGGED BY** Veronica Fay **CHECKED BY** Joe Booth **AT END OF DRILLING** ---  
**NOTES** ▼ AFTER DRILLING 6.22 ft / Elev -0.12 ft immediately before developing



Bottom of borehole at 25.0 feet.

GENERAL.BH / TP / WELL - GINT STD US LAB.GDT - 2/24/20 13:30 - X:\PROJECTS\SCS\SCS MCMANUS\GINT FILES\MCMANUS ASH POND WELL INSTALLATION.GPJ

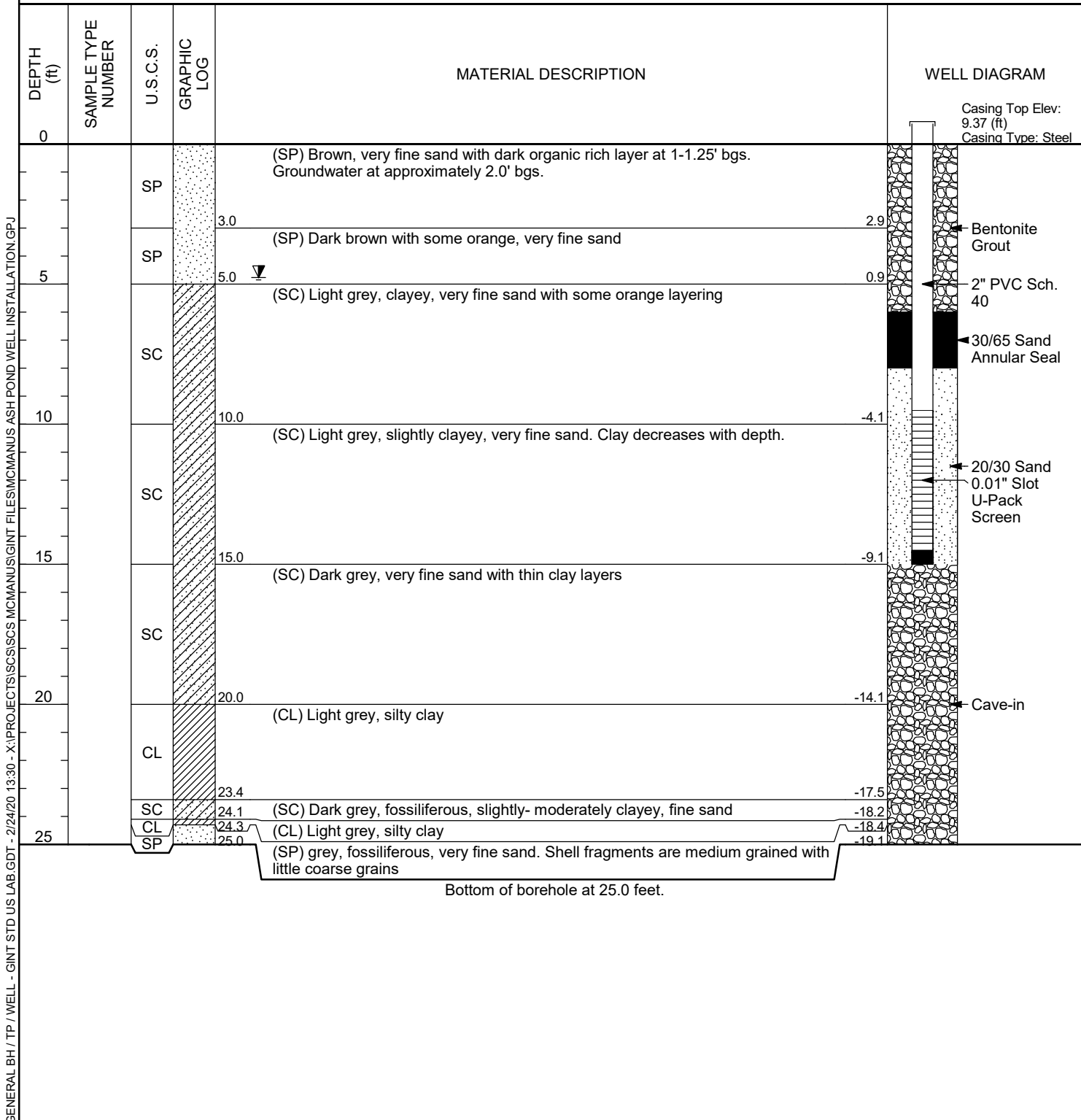
**CLIENT** Southern Company Services **PROJECT NAME** Plant McManus  
**PROJECT NUMBER** N/A **PROJECT LOCATION** Brunswick, GA  
**DATE STARTED** 11/1/19 **COMPLETED** 11/1/19 **GROUND ELEVATION** 9.7 ft NAVD 88 **HOLE SIZE** 12 inches  
**DRILLING CONTRACTOR** Cascade Drilling, L.P. **GROUND WATER LEVELS:**  
**DRILLING METHOD** Hollow Stem Auger (HSA) **AT TIME OF DRILLING** ---  
**LOGGED BY** Veronica Fay **CHECKED BY** Joe Booth **AT END OF DRILLING** ---  
**NOTES** ▼ AFTER DRILLING 10.32 ft / Elev -0.62 ft immediately before developing



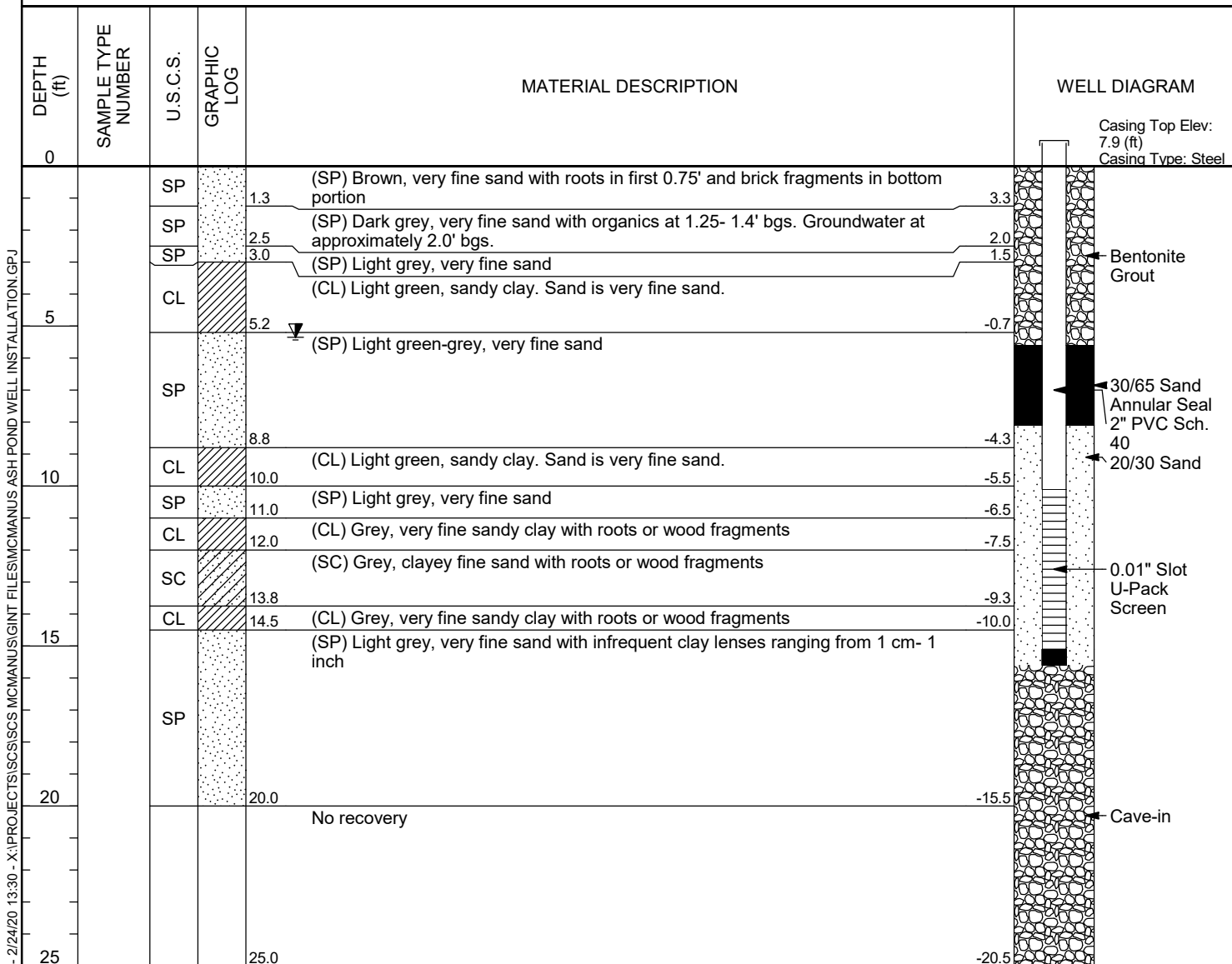
Bottom of borehole at 25.0 feet.

GENERAL.BH / TP / WELL - GINT STD US LAB.GDT - 2/24/20 13:30 - X:\PROJECTS\SCS\SCS MCMANUS\GINT FILES\MCMANUS ASH POND WELL INSTALLATION.GPJ

**CLIENT** Southern Company Services **PROJECT NAME** Plant McManus  
**PROJECT NUMBER** N/A **PROJECT LOCATION** Brunswick, GA  
**DATE STARTED** 11/22/19 **COMPLETED** 11/22/19 **GROUND ELEVATION** 5.9 ft NAVD 88 **HOLE SIZE** 6 inches  
**DRILLING CONTRACTOR** Cascade Drilling, L.P. **GROUND WATER LEVELS:**  
**DRILLING METHOD** Sonic **AT TIME OF DRILLING** ---  
**LOGGED BY** Veronica Fay **CHECKED BY** Joe Booth **AT END OF DRILLING** ---  
**NOTES** ▼ AFTER DRILLING 4.77 ft / Elev 1.13 ft immediately before developing



**CLIENT** Southern Company Services **PROJECT NAME** Plant McManus  
**PROJECT NUMBER** N/A **PROJECT LOCATION** Brunswick, GA  
**DATE STARTED** 11/22/19 **COMPLETED** 11/22/19 **GROUND ELEVATION** 4.5 ft NAVD 88 **HOLE SIZE** 6 inches  
**DRILLING CONTRACTOR** Cascade Drilling, L.P. **GROUND WATER LEVELS:**  
**DRILLING METHOD** Sonic **AT TIME OF DRILLING** ---  
**LOGGED BY** Veronica Fay **CHECKED BY** Joe Booth **AT END OF DRILLING** ---  
**NOTES** ▼ AFTER DRILLING 5.35 ft / Elev -0.85 ft immediately before developing



Bottom of borehole at 25.0 feet.

GENERAL.BH / TP / WELL - GINT STD US LAB.GDT - 2/24/20 13:30 - X:\PROJECTS\SCS\MCMANUS\GINT FILES\MCMANUS ASH POND WELL INSTALLATION.GPJ

CHART TO SHOW SELECT TEST WELL LOCATIONS OF  
**GEORGIA POWER COMPANY,**  
**PLANT McMANUS,**  
**1356th G.M.D., GLYNN COUNTY, GEORGIA**

FOR: RESOLUTE ENVIRONMENTAL

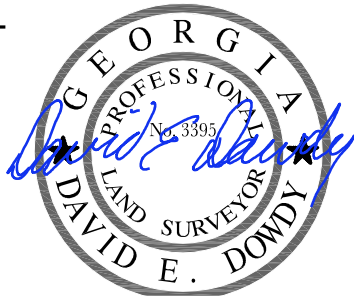
TEST WELL LOCATIONS						
LOCATION DESIGNATION	NORTHING	EASTING	WELL CASING ELEVATION	MAG NAIL ELEVATION	GROUND ELEVATION	TYPE
MCM-18	442067.07	851698.41	9.00'	6.01'	5.9'	STANDING
MCM-19	441157.82	852338.86	8.71'	5.77'	5.3'	STANDING
MCM-20	440944.40	852185.15	10.07'	7.07'	6.6'	STANDING

**NOTES:**

1. BEARINGS SHOWN HEREON ARE BASED ON GRID NORTH-NAD83 COORDINATE DATUM FOR THE GEORGIA EAST ZONE UTILIZING THE TRIMBLE VRS NETWORK.
2. ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) UTILIZING THE TRIMBLE VRS NETWORK.

DATE OF FIELD SURVEY: JANUARY 22, 2020

**APPROVED BY:**



\_\_\_\_\_  
 DAVID E. DOWDY  
 GA. PROFESSIONAL SURVEYOR No. 3395



**JACKSON SURVEYING, INC.**  
*Surveyors and Land Planners*

207 ROSE DRIVE  
 BRUNSWICK, GEORGIA 31520

Ofc. (912) 265-3856

DWN. BY: DED

CKD. BY: PJ

FB. 122, PG. 46

CHART TO SHOW SELECT TEST WELL LOCATIONS OF  
**GEORGIA POWER COMPANY,**  
**PLANT McMANUS,**  
 1356th G.M.D., GLYNN COUNTY, GEORGIA

FOR: RESOLUTE ENVIRONMENTAL

TEST WELL LOCATIONS						
LOCATION DESIGNATION	NORTHING	EASTING	WELL CASING ELEVATION	MAG NAIL ELEVATION	GROUND ELEVATION	TYPE
PZ-9	444082.13	849471.64	9.41'	6.57'	6.1'	STANDING
PZ-10	444949.09	851673.98	12.17'	9.74'	9.7'	STANDING
PZ-11	443222.86	849280.51	9.37'	6.57'	5.9'	STANDING
PZ-12	443593.34	849396.87	7.90'	5.02'	4.5'	STANDING
MCM-14A	443362.29	852322.73	11.10	8.48	—	STANDING
MWA-19	442570.79	850639.79	12.14'	—	—	STANDING

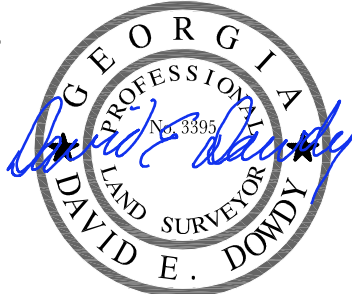
STRATIGRAPHIC SITES			
LOCATION DESIGNATION	NORTHING	EASTING	GROUND ELEVATION
STRAT 1	442952.40	849816.43	10.7'
STRAT 2	443826.52	849731.87	6.1'
STRAT 3	444587.14	851092.99	6.7'
STRAT 4	444505.59	852426.34	2.9'
STRAT 5	443221.85	852129.21	7.9
STRAT 6	442280.63	851119.77	7.0'

**NOTES:**

1. COORDINATES SHOWN HEREON ARE BASED ON GRID NORTH-NAD83 COORDINATE DATUM FOR THE GEORGIA EAST ZONE UTILIZING THE TRIMBLE VRS NETWORK.
2. ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) UTILIZING THE TRIMBLE VRS NETWORK.

DATE OF FIELD SURVEY: FEBRUARY 12, 2020

**APPROVED BY:**



FEBRUARY 18, 2020

DAVID E. DOWDY  
 GA. PROFESSIONAL SURVEYOR No. 3395



**JACKSON SURVEYING, INC.**  
*Surveyors and Land Planners*

207 ROSE DRIVE  
 BRUNSWICK, GEORGIA 31520

Ofc. (912) 265-3856

DWN. BY: DED

CKD. BY: PJ

FB. 122, PG. 46



Product Name: Low-Flow System

Date: 2019-11-06 14:48:23

Project Information:

Operator Name Kevin Stephenson  
Company Name Resolute Env  
Project Name Well Development  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 647057  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type 12v Typhoon Pump  
Tubing Type LDPE  
Tubing Diameter .375 in  
Tubing Length 35 ft

Pump placement from TOC 22.86 ft

Well Information:

Well ID MCM-18WD  
Well diameter 2 in  
Well Total Depth 27.86 ft  
Screen Length 10 ft  
Depth to Water 6.64 ft

Pumping Information:

Final Pumping Rate 6000 mL/min  
Total System Volume 0.8501527 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 72.36 in  
Total Volume Pumped 168 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 10		+/- 0.2	+/- 1000%
Last 5	14:28:59	720.55	21.45	4.52	5888.03	1.44	12.67	0.01	144.51
Last 5	14:32:59	960.55	21.45	4.55	5612.35	1.45	12.67	0.01	142.50
Last 5	14:36:59	1200.55	21.44	4.57	5312.84	1.29	12.67	0.01	140.62
Last 5	14:41:05	1446.55	21.44	4.60	5202.04	1.16	12.67	0.01	138.84
Last 5	14:45:05	1686.55	21.43	4.62	5080.54	1.21	12.67	0.01	137.09
Variance 0			-0.00	0.02	-299.51			-0.00	-1.88
Variance 1			-0.00	0.02	-110.80			-0.00	-1.78
Variance 2			-0.01	0.02	-121.50			0.00	-1.74

Notes

Pre-purged 54 gallons.

Grab Samples

Product Name: Low-Flow System

Date: 2019-11-05 15:55:41

Project Information:

Operator Name Kevin Stephenson  
Company Name Resolute Env  
Project Name Well Development  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 647057  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type 12v Typhoon Pump  
Tubing Type LDPE  
Tubing Diameter .375 in  
Tubing Length 35 ft

Pump placement from TOC 23.32 ft

Well Information:

Well ID MCM-19WD  
Well diameter 2 in  
Well Total Depth 28.32 ft  
Screen Length 10 ft  
Depth to Water 5.94 ft

Pumping Information:

Final Pumping Rate 10000 mL/min  
Total System Volume 0.8501527 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 81 in  
Total Volume Pumped 200 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 10		+/- 0.2	+/- 1000%
Last 5	15:36:06	240.09	21.46	5.04	10223.36	2.06	12.65	0.01	135.69
Last 5	15:40:06	480.02	21.45	5.06	9949.46	2.29	12.65	0.01	134.47
Last 5	15:44:06	720.13	21.45	5.07	9641.70	2.24	12.66	0.01	133.76
Last 5	15:48:06	960.13	21.44	5.09	9458.64	2.31	12.67	0.01	132.67
Last 5	15:52:12	1206.13	21.44	5.10	9270.61	2.64	12.69	0.01	131.41
Variance 0			-0.01	0.01	-307.76			-0.00	-0.71
Variance 1			-0.00	0.01	-183.06			-0.00	-1.09
Variance 2			-0.00	0.01	-188.03			-0.00	-1.26

Notes

Well Development. Pre-purged 190 gallons.

Grab Samples

Product Name: Low-Flow System

Date: 2019-11-06 11:47:29

Project Information:

Operator Name Kevin Stephenson  
Company Name Resolute Env  
Project Name Well Development  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 647057  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type 12v Typhoon Pump  
Tubing Type LDPE  
Tubing Diameter .375 in  
Tubing Length 30 ft

Pump placement from TOC 23.00 ft

Well Information:

Well ID MCM-20WD  
Well diameter 2 in  
Well Total Depth 23.05 ft  
Screen Length 10 ft  
Depth to Water 8.65 ft

Pumping Information:

Final Pumping Rate 6000 mL/min  
Total System Volume 0.7415594 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 156.12 in  
Total Volume Pumped 120 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 10		+/- 0.2	+/- 1000%
Last 5	11:28:15	240.17	23.52	3.89	22712.22	9.87	21.66	3.88	164.73
Last 5	11:32:15	480.02	23.45	3.89	22666.07	3.85	21.66	4.48	165.62
Last 5	11:36:15	720.02	23.41	3.89	22815.16	3.21	21.66	3.68	166.64
Last 5	11:40:17	962.02	23.50	3.89	22895.10	2.99	21.66	3.60	167.46
Last 5	11:44:17	1202.02	23.43	3.89	22916.69	3.32	21.66	3.77	168.25
Variance 0			-0.04	-0.00	149.09			-0.80	1.02
Variance 1			0.09	0.00	79.94			-0.08	0.81
Variance 2			-0.07	-0.00	21.58			0.17	0.79

Notes

Pre-purged 56 gallons. Water level during trolling was below top of pump.

Grab Samples

Product Name: Low-Flow System

Date: 2019-11-07 17:11:03

Project Information:

Operator Name Kevin Stephenson  
Company Name Resolute Env  
Project Name Well Development  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 647057  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type 12v Typhoon Pump  
Tubing Type LDPE  
Tubing Diameter .375 in  
Tubing Length 30 ft

Pump placement from TOC 23.05 ft

Well Information:

Well ID PZ-9 WD  
Well diameter 2 in  
Well Total Depth 24.05 ft  
Screen Length 10 ft  
Depth to Water 6.22 ft

Pumping Information:

Final Pumping Rate 4000 mL/min  
Total System Volume 0.7415594 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 201.96 in  
Total Volume Pumped 40 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 10		+/- 0.2	+/- 1000%
Last 5	16:53:59	240.08	22.81	5.29	3270.25	6.84	21.57	4.74	109.88
Last 5	16:57:59	480.02	22.87	5.30	3276.59	4.46	23.05	4.16	106.11
Last 5	17:01:59	720.02	22.81	5.31	3269.48	5.11	23.05	4.11	103.00
Last 5	17:05:59	960.02	22.92	5.31	3286.13	4.96	23.05	4.70	100.98
Last 5	17:09:59	1200.02	22.79	5.32	3270.75	4.12	23.05	4.23	99.37
Variance 0			-0.06	0.01	-7.11			-0.05	-3.11
Variance 1			0.11	0.00	16.65			0.59	-2.02
Variance 2			-0.12	0.01	-15.38			-0.47	-1.61

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-11-06 16:39:22

Project Information:

Operator Name Kevin Stephenson  
Company Name Resolute Env  
Project Name Well Development  
Site Name Plant McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 647057  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type 12v Typhoon Pump  
Tubing Type LDPE  
Tubing Diameter .375 in  
Tubing Length 30 ft

Pump placement from TOC 21.63 ft

Well Information:

Well ID PZ-10W  
Well diameter 2 in  
Well Total Depth 22.91 ft  
Screen Length 10 ft  
Depth to Water 10.32 ft

Pumping Information:

Final Pumping Rate 5000 mL/min  
Total System Volume 0.7415594 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 108.84 in  
Total Volume Pumped 100 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 10		+/- 0.2	+/- 1000%
Last 5	16:22:28	240.02	22.24	5.03	652.74	7.50	19.16	0.45	117.31
Last 5	16:26:28	480.02	22.22	5.02	642.37	5.99	19.30	0.45	117.31
Last 5	16:30:28	720.02	22.21	5.01	646.08	3.74	19.38	0.44	117.18
Last 5	16:34:28	960.02	22.21	5.00	642.49	2.43	19.40	0.43	117.25
Last 5	16:38:28	1200.00	22.21	5.00	651.42	1.54	19.39	0.43	117.48
Variance 0			-0.01	-0.01	3.71			-0.02	-0.13
Variance 1			-0.00	-0.00	-3.59			-0.01	0.07
Variance 2			-0.00	-0.00	8.93			0.00	0.23

Notes

Pre-purged 45 gallons.

Grab Samples

Product Name: Low-Flow System

Date: 2020-01-08 17:27:26

Project Information:

Operator Name Trent Godwin  
Company Name Resolute  
Project Name Background  
Site Name McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 646773  
Turbidity Make/Model LaMotte 20-20

Pump Information:

Pump Model/Type GeoPump Peristaltic  
Tubing Type LDPE  
Tubing Diameter 0.188 in  
Tubing Length 22 ft

Pump placement from TOC 18.5 ft

Well Information:

Well ID PZ-11  
Well diameter 2 in  
Well Total Depth 19.08 ft  
Screen Length 10 ft  
Depth to Water 4.77 ft

Pumping Information:

Final Pumping Rate 400 mL/min  
Total System Volume 0.2100905 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 23.16 in  
Total Volume Pumped 200 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 10%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 100%
Last 5	17:09:40	719.98	19.15	5.44	718.06	12.80	6.70	0.39	61.56
Last 5	17:13:40	959.96	19.15	5.44	716.08	11.70	6.70	0.37	58.85
Last 5	17:17:45	1204.95	19.16	5.44	703.63	8.29	6.70	0.34	55.97
Last 5	17:21:45	1444.94	19.19	5.44	699.91	7.18	6.70	0.33	54.39
Last 5	17:25:45	1684.92	19.15	5.44	693.27	--	--	0.33	52.79
Variance 0			0.01	0.00	-12.46			-0.03	-2.89
Variance 1			0.03	-0.00	-3.72			-0.02	-1.58
Variance 2			-0.04	-0.00	-6.63			-0.00	-1.60

Notes

Well development. Purged 50 gallons total from well.

Grab Samples

Product Name: Low-Flow System

Date: 2020-01-09 17:15:59

Project Information:

Operator Name Trent Godwin  
Company Name Resolute  
Project Name Background  
Site Name McManus  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 646773  
Turbidity Make/Model LaMotte 20-20

Pump Information:

Pump Model/Type GeoPump Peristaltic  
Tubing Type LDPE  
Tubing Diameter 0.188 in  
Tubing Length 23 ft

Pump placement from TOC 18 ft

Well Information:

Well ID PZ-12  
Well diameter 2 in  
Well Total Depth 18.70 ft  
Screen Length 10 ft  
Depth to Water 5.35 ft

Pumping Information:

Final Pumping Rate 10000 mL/min  
Total System Volume 0.2155491 L  
Calculated Sample Rate 240 sec  
Stabilization Drawdown 108.84 in  
Total Volume Pumped 320 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 10%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 100%
Last 5	16:58:19	240.00	22.72	6.70	40675.43	0.56	14.38	0.08	-321.86
Last 5	17:02:19	479.99	22.72	6.69	40820.86	0.71	14.40	0.08	-325.53
Last 5	17:06:19	719.98	22.72	6.69	40998.50	0.49	14.40	0.08	-328.46
Last 5	17:10:19	959.97	22.72	6.68	41080.55	0.64	14.42	0.08	-330.51
Last 5	17:14:27	1207.95	22.72	6.68	41223.91	0.53	14.42	0.08	-332.47
Variance 0			0.00	-0.01	177.64			-0.00	-2.93
Variance 1			0.00	-0.00	82.05			-0.00	-2.05
Variance 2			0.00	-0.00	143.36			-0.00	-1.96

Notes

Well development

Grab Samples

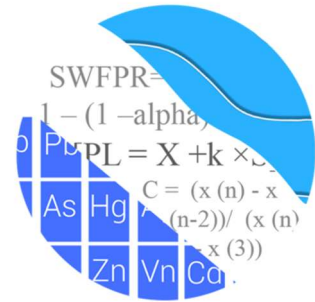




# APPENDIX C

## Statistical Analyses

## GROUNDWATER STATS CONSULTING



January 9, 2020

Resolute Environmental & Water Resources Consulting  
Attn: Mr. Stephen Wilson  
1003 Weatherstone Parkway, Ste. 320  
Woodstock, GA 30188

Dear Mr. Wilson,

Groundwater Stats Consulting, formerly the statistical consulting division of Sanitas Technologies, is pleased to provide the statistical analysis of the October/November 2019 Detection Monitoring Event for Georgia Power Company's Plant McManus Ash Pond. The analysis complies with the federal rule for the Disposal of Coal Combustion Residuals from Electric Utilities (CCR Rule, 2015), the Georgia Environmental Protection Division Rules for Solid Waste Management Chapter 391-3-4-.10, and follows the USEPA Unified Guidance (2009).

The groundwater monitoring well network consists of the following:

- Upgradient Wells: MCM-01, MCM-02, MCM-15, MCM-16, MCM-08, MCM-11
- Downgradient Wells: MCM-04, MCM-05, MCM-06, MCM-07, MCM-12, MCM-14, MCM-17

Data were sent electronically to Groundwater Stats Consulting, and the statistical analysis was reviewed by Dr. Jim Loftis, Civil & Environmental Engineering professor emeritus at Colorado State University and Senior Advisor to Groundwater Stats Consulting.

The statistical analysis provided in this report was performed according to the background screening conducted by MacStat Consulting in April 2019. Interwell prediction limits, combined with a 1-of-2 resample plan, for Appendix III parameters were recommended as the primary statistical method in Detection Monitoring. The following parameters were evaluated: boron, calcium, chloride, fluoride, pH, sulfate and total dissolved solids (TDS).

Data from each well are plotted on time series plots for the constituents of interest to monitor concentration levels over time. Additionally, box and whisker plots are provided for visual comparison across all wells, of upgradient to downgradient water quality, and other spatial patterns across the site.

When concentrations exist higher in downgradient wells relative to observations reported upgradient of the facility, as seen in the majority of the Appendix III parameters, this may be reflective of natural variation or a result of practices at the facility. A separate study and hydrogeological investigation would be required to fully understand the geochemical conditions and expected groundwater quality for the region. That study and assessment is beyond the scope of services provided by Groundwater Stats Consulting.

For regulatory comparison of current observations against statistical limits, the annual site-wide false positive rate is based on the USEPA Unified Guidance (2009) recommendation of 10% (5% for each semi-annual sample event). The screening evaluation performed by MacStat Consulting demonstrated that interwell limits combined with a 1-of-2 resample plan provided sufficient power to detect a change at any of the downgradient wells, which complies with the USEPA Unified Guidance recommendation. The EPA suggests that the selected statistical method should provide at least 55% power at 3 standard deviations or at least 80% power at 4 standard deviations.

### **Summary of Statistical Methods:**

Interwell prediction limits, combined with a 1-of-2 resample plan for the above constituents are used to statistically evaluate the October/November 2019 samples.

Parametric prediction limits are utilized when the screened historical data follow a normal or transformed-normal distribution. When data cannot be normalized or the majority of data are nondetects, a nonparametric test is utilized. The distribution of data is tested using the Shapiro-Wilk/Shapiro-Francia test for normality. After testing for normality and performing any adjustments as discussed below (US EPA, 2009), data are analyzed using either parametric or non-parametric prediction limits.

- No statistical analyses are required on wells and analytes containing 100% nondetects (USEPA Unified Guidance, 2009, Chapter 6).
- When data contain <15% nondetects in background, simple substitution of one-half the reporting limit is utilized in the statistical analysis. The reporting limit utilized for nondetects is the practical quantification limit (PQL) as reported by the laboratory.

- When data contain between 15-50% nondetects, the Kaplan-Meier nondetect adjustment is applied to the background data. This technique adjusts the mean and standard deviation of the historical concentrations to account for concentrations below the reporting limit.
- Nonparametric prediction limits are used on data containing greater than 50% nondetects.

Natural systems continuously evolve due to physical changes made to the environment. Examples include capping a landfill, paving areas near a well, or lining a drainage channel to prevent erosion. Interwell prediction limits are updated with new upgradient well data during each statistical analysis after careful screening for new outliers. When extreme values are noted in upgradient wells, they are flagged as outliers in the database and deselected prior to construction of statistical limits. This step results in conservative limits from a regulatory perspective. No outliers were flagged for this analysis. Periodically, all upgradient well data will be evaluated for long-term trends. Earlier measurements may be deselected in cases where they no longer represent present-day water quality.

### Prediction Limits

Interwell prediction limits, constructed from all available pooled upgradient well data were used to evaluate the most recent compliance sample from each downgradient well reported during the October/November 2019 sample event.

In the event of an initial exceedance of prediction limits by compliance well data, the 1-of-2 verification resample plan allows for collection of an additional sample to determine whether the initial exceedance is confirmed. When the resample confirms the initial exceedance, a statistically significant increase (SSI) is identified and further research would be required to identify the cause of the exceedance (i.e. natural variation, an off-site source, practices at the site). If the resample falls within the statistical limit, the initial exceedance is considered to be a false positive result and, therefore, requires no further action.

When the October/November 2019 samples were compared to their respective interwell prediction limits, several statistically significant increases over background were noted. A summary table of these prediction limits and results of comparisons follow this letter.

The Sen's Slope/Mann Kendall trend test was used to determine whether there is a statistically significant trend over the entire period of record for the exceedances noted above. Upgradient wells are included in the trend testing to determine whether similar patterns exist upgradient of the facility. Statistically significant increasing trends were

noted as follows: boron in downgradient well MCM-07; calcium in downgradient wells MCM-06, MCM-07, and MCM-14, and upgradient well MCM-08; chloride in downgradient wells MCM-06, MCM-07, and MCM-14, and upgradient well MCM-15; sulfate in downgradient wells MCM-06 and MCM-07; and TDS in downgradient wells MCM-06, MCM-07, MCM-14, and MCM-17, and upgradient well MCM-08.

Statistically significant decreasing trends were noted as follows: boron in upgradient wells MCM-02 and MCM-16; fluoride in upgradient well MCM-11; pH in downgradient wells MCM-5, MCM-6, MCM-12, and MCM-14. A summary table of trend test results for the exceedances follows this letter. Thank you for the opportunity to assist you in the statistical analysis of groundwater quality for the Plant McManus Ash Pond. If you have any questions or comments, please feel free to contact us. For Groundwater Stats Consulting,



Andrew T. Collins  
Groundwater Analyst



Kristina L. Rayner  
Groundwater Statistician

# Interwell Prediction Limit Summary Table - Significant Results

Plant McManus Client: Southern Company Data: McManus Ash Pond Printed 1/16/2020, 1:20 PM

Constituent	Well	Upper Lim	Lower Lim	Date	Observ.	Sig.	Bg	N Bg	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	MCM-05	0.398	n/a	11/20/2019	0.53	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Boron (mg/L)	MCM-06	0.398	n/a	10/17/2019	1.3	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Boron (mg/L)	MCM-07	0.398	n/a	11/20/2019	1.3	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Boron (mg/L)	MCM-12	0.398	n/a	10/15/2019	1.1	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Boron (mg/L)	MCM-14	0.398	n/a	11/21/2019	1	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Boron (mg/L)	MCM-17	0.398	n/a	11/21/2019	1.5	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Calcium (mg/L)	MCM-05	47.23	n/a	11/20/2019	55.8	Yes	62	2.181	0.8731	1.613	None	In(x)	0.001075	Param Inter 1 of 2	
Calcium (mg/L)	MCM-06	47.23	n/a	10/17/2019	309	Yes	62	2.181	0.8731	1.613	None	In(x)	0.001075	Param Inter 1 of 2	
Calcium (mg/L)	MCM-07	47.23	n/a	11/20/2019	308	Yes	62	2.181	0.8731	1.613	None	In(x)	0.001075	Param Inter 1 of 2	
Calcium (mg/L)	MCM-14	47.23	n/a	11/21/2019	305	Yes	62	2.181	0.8731	1.613	None	In(x)	0.001075	Param Inter 1 of 2	
Calcium (mg/L)	MCM-17	47.23	n/a	11/21/2019	125	Yes	62	2.181	0.8731	1.613	None	In(x)	0.001075	Param Inter 1 of 2	
Chloride (mg/L)	MCM-06	2340	n/a	10/17/2019	9930	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Chloride (mg/L)	MCM-07	2340	n/a	11/20/2019	9810	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Chloride (mg/L)	MCM-14	2340	n/a	11/21/2019	8330	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Chloride (mg/L)	MCM-17	2340	n/a	11/21/2019	3890	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Fluoride (mg/L)	MCM-12	0.85	n/a	10/15/2019	1	Yes	67	n/a	n/a	29.85	n/a	n/a	n/a	0.0004267	NP Inter (normality) 1 of 2
pH (S.U.)	MCM-05	5.722	4.736	11/20/2019	6.58	Yes	71	5.229	0.2584	0	None	No	0.0005373	Param Inter 1 of 2	
pH (S.U.)	MCM-06	5.722	4.736	10/17/2019	6.86	Yes	71	5.229	0.2584	0	None	No	0.0005373	Param Inter 1 of 2	
pH (S.U.)	MCM-07	5.722	4.736	11/20/2019	6.27	Yes	71	5.229	0.2584	0	None	No	0.0005373	Param Inter 1 of 2	
pH (S.U.)	MCM-12	5.722	4.736	10/15/2019	6.19	Yes	71	5.229	0.2584	0	None	No	0.0005373	Param Inter 1 of 2	
pH (S.U.)	MCM-14	5.722	4.736	11/21/2019	6.67	Yes	71	5.229	0.2584	0	None	No	0.0005373	Param Inter 1 of 2	
pH (S.U.)	MCM-17	5.722	4.736	11/21/2019	6.44	Yes	71	5.229	0.2584	0	None	No	0.0005373	Param Inter 1 of 2	
Sulfate (mg/L)	MCM-06	498	n/a	10/17/2019	507	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MCM-07	498	n/a	11/20/2019	1550	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MCM-14	498	n/a	11/21/2019	1070	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Total Dissolved Solids [TDS] (mg/L)	MCM-06	4070	n/a	10/17/2019	16100	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Total Dissolved Solids [TDS] (mg/L)	MCM-07	4070	n/a	11/20/2019	16700	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Total Dissolved Solids [TDS] (mg/L)	MCM-14	4070	n/a	11/21/2019	15800	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Total Dissolved Solids [TDS] (mg/L)	MCM-17	4070	n/a	11/21/2019	7720	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2

# Interwell Prediction Limit Summary Table - All Results

Plant McManus    Client: Southern Company    Data: McManus Ash Pond    Printed 1/16/2020, 1:20 PM

Constituent	Well	Upper Lim	Lower Lim	Date	Observ.	Sig.	Bg	N	Bq	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	MCM-04	0.398	n/a	10/15/2019	0.068	No	61	n/a	n/a	0	n/a	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
<b>Boron (mg/L)</b>	<b>MCM-05</b>	<b>0.398</b>	<b>n/a</b>	<b>11/20/2019</b>	<b>0.53</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>
Boron (mg/L)	MCM-06	0.398	n/a	10/17/2019	1.3	Yes	61	n/a	n/a	0	n/a	0	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Boron (mg/L)	MCM-07	0.398	n/a	11/20/2019	1.3	Yes	61	n/a	n/a	0	n/a	0	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Boron (mg/L)	MCM-12	0.398	n/a	10/15/2019	1.1	Yes	61	n/a	n/a	0	n/a	0	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Boron (mg/L)	MCM-14	0.398	n/a	11/21/2019	1	Yes	61	n/a	n/a	0	n/a	0	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Boron (mg/L)	MCM-17	0.398	n/a	11/21/2019	1.5	Yes	61	n/a	n/a	0	n/a	0	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Calcium (mg/L)	MCM-04	47.23	n/a	10/15/2019	15.5	No	62	2.181	0.8731	1.613	None	In(x)	0.001075	Param Inter 1 of 2		
<b>Calcium (mg/L)</b>	<b>MCM-05</b>	<b>47.23</b>	<b>n/a</b>	<b>11/20/2019</b>	<b>55.8</b>	<b>Yes</b>	<b>62</b>	<b>2.181</b>	<b>0.8731</b>	<b>1.613</b>	<b>None</b>	<b>In(x)</b>	<b>0.001075</b>	<b>Param Inter 1 of 2</b>		
Calcium (mg/L)	MCM-06	47.23	n/a	10/17/2019	309	Yes	62	2.181	0.8731	1.613	None	In(x)	0.001075	Param Inter 1 of 2		
Calcium (mg/L)	MCM-07	47.23	n/a	11/20/2019	308	Yes	62	2.181	0.8731	1.613	None	In(x)	0.001075	Param Inter 1 of 2		
Calcium (mg/L)	MCM-12	47.23	n/a	10/15/2019	7.9	No	62	2.181	0.8731	1.613	None	In(x)	0.001075	Param Inter 1 of 2		
Calcium (mg/L)	MCM-14	47.23	n/a	11/21/2019	305	Yes	62	2.181	0.8731	1.613	None	In(x)	0.001075	Param Inter 1 of 2		
Calcium (mg/L)	MCM-17	47.23	n/a	11/21/2019	125	Yes	62	2.181	0.8731	1.613	None	In(x)	0.001075	Param Inter 1 of 2		
Chloride (mg/L)	MCM-04	2340	n/a	10/15/2019	46	No	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2	
Chloride (mg/L)	MCM-05	2340	n/a	11/20/2019	1480	No	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2	
<b>Chloride (mg/L)</b>	<b>MCM-06</b>	<b>2340</b>	<b>n/a</b>	<b>10/17/2019</b>	<b>9930</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>	
<b>Chloride (mg/L)</b>	<b>MCM-07</b>	<b>2340</b>	<b>n/a</b>	<b>11/20/2019</b>	<b>9810</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>	
Chloride (mg/L)	MCM-12	2340	n/a	10/15/2019	744	No	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2	
<b>Chloride (mg/L)</b>	<b>MCM-14</b>	<b>2340</b>	<b>n/a</b>	<b>11/21/2019</b>	<b>8330</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>	
<b>Chloride (mg/L)</b>	<b>MCM-17</b>	<b>2340</b>	<b>n/a</b>	<b>11/21/2019</b>	<b>3890</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>	
Fluoride (mg/L)	MCM-04	0.85	n/a	10/15/2019	0.095	No	67	n/a	n/a	29.85	n/a	n/a	n/a	0.0004267	NP Inter (normality) 1 of 2	
Fluoride (mg/L)	MCM-05	0.85	n/a	11/20/2019	0.34	No	67	n/a	n/a	29.85	n/a	n/a	n/a	0.0004267	NP Inter (normality) 1 of 2	
Fluoride (mg/L)	MCM-06	0.85	n/a	10/17/2019	0.3ND	No	67	n/a	n/a	29.85	n/a	n/a	n/a	0.0004267	NP Inter (normality) 1 of 2	
Fluoride (mg/L)	MCM-07	0.85	n/a	11/20/2019	0.3ND	No	67	n/a	n/a	29.85	n/a	n/a	n/a	0.0004267	NP Inter (normality) 1 of 2	
<b>Fluoride (mg/L)</b>	<b>MCM-12</b>	<b>0.85</b>	<b>n/a</b>	<b>10/15/2019</b>	<b>1</b>	<b>Yes</b>	<b>67</b>	<b>n/a</b>	<b>n/a</b>	<b>29.85</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>0.0004267</b>	<b>NP Inter (normality) 1 of 2</b>	
Fluoride (mg/L)	MCM-14	0.85	n/a	11/21/2019	0.3ND	No	67	n/a	n/a	29.85	n/a	n/a	n/a	0.0004267	NP Inter (normality) 1 of 2	
Fluoride (mg/L)	MCM-17	0.85	n/a	11/21/2019	0.3ND	No	67	n/a	n/a	29.85	n/a	n/a	n/a	0.0004267	NP Inter (normality) 1 of 2	
pH (S.U.)	MCM-04	5.722	4.736	11/20/2019	5.03	No	71	5.229	0.2584	0	None	No	0.0005373	Param Inter 1 of 2		
<b>pH (S.U.)</b>	<b>MCM-05</b>	<b>5.722</b>	<b>4.736</b>	<b>11/20/2019</b>	<b>6.58</b>	<b>Yes</b>	<b>71</b>	<b>5.229</b>	<b>0.2584</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.0005373</b>	<b>Param Inter 1 of 2</b>		
<b>pH (S.U.)</b>	<b>MCM-06</b>	<b>5.722</b>	<b>4.736</b>	<b>10/17/2019</b>	<b>6.86</b>	<b>Yes</b>	<b>71</b>	<b>5.229</b>	<b>0.2584</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.0005373</b>	<b>Param Inter 1 of 2</b>		
<b>pH (S.U.)</b>	<b>MCM-07</b>	<b>5.722</b>	<b>4.736</b>	<b>11/20/2019</b>	<b>6.27</b>	<b>Yes</b>	<b>71</b>	<b>5.229</b>	<b>0.2584</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.0005373</b>	<b>Param Inter 1 of 2</b>		
<b>pH (S.U.)</b>	<b>MCM-12</b>	<b>5.722</b>	<b>4.736</b>	<b>10/15/2019</b>	<b>6.19</b>	<b>Yes</b>	<b>71</b>	<b>5.229</b>	<b>0.2584</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.0005373</b>	<b>Param Inter 1 of 2</b>		
<b>pH (S.U.)</b>	<b>MCM-14</b>	<b>5.722</b>	<b>4.736</b>	<b>11/21/2019</b>	<b>6.67</b>	<b>Yes</b>	<b>71</b>	<b>5.229</b>	<b>0.2584</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.0005373</b>	<b>Param Inter 1 of 2</b>		
<b>pH (S.U.)</b>	<b>MCM-17</b>	<b>5.722</b>	<b>4.736</b>	<b>11/21/2019</b>	<b>6.44</b>	<b>Yes</b>	<b>71</b>	<b>5.229</b>	<b>0.2584</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.0005373</b>	<b>Param Inter 1 of 2</b>		
Sulfate (mg/L)	MCM-04	498	n/a	10/15/2019	105	No	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2	
Sulfate (mg/L)	MCM-05	498	n/a	11/20/2019	132	No	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2	
<b>Sulfate (mg/L)</b>	<b>MCM-06</b>	<b>498</b>	<b>n/a</b>	<b>10/17/2019</b>	<b>507</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>	
<b>Sulfate (mg/L)</b>	<b>MCM-07</b>	<b>498</b>	<b>n/a</b>	<b>11/20/2019</b>	<b>1550</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>	
Sulfate (mg/L)	MCM-12	498	n/a	10/15/2019	0.54	No	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2	
<b>Sulfate (mg/L)</b>	<b>MCM-14</b>	<b>498</b>	<b>n/a</b>	<b>11/21/2019</b>	<b>1070</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>	
Sulfate (mg/L)	MCM-17	498	n/a	11/21/2019	428	No	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2	
Total Dissolved Solids [TDS] (mg/L)	MCM-04	4070	n/a	10/15/2019	237	No	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2	
Total Dissolved Solids [TDS] (mg/L)	MCM-05	4070	n/a	11/20/2019	2640	No	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2	
<b>Total Dissolved Solids [TDS] (mg/L)</b>	<b>MCM-06</b>	<b>4070</b>	<b>n/a</b>	<b>10/17/2019</b>	<b>16100</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>	
<b>Total Dissolved Solids [TDS] (mg/L)</b>	<b>MCM-07</b>	<b>4070</b>	<b>n/a</b>	<b>11/20/2019</b>	<b>16700</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>	
Total Dissolved Solids [TDS] (mg/L)	MCM-12	4070	n/a	10/15/2019	1730	No	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2	
<b>Total Dissolved Solids [TDS] (mg/L)</b>	<b>MCM-14</b>	<b>4070</b>	<b>n/a</b>	<b>11/21/2019</b>	<b>15800</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>	
<b>Total Dissolved Solids [TDS] (mg/L)</b>	<b>MCM-17</b>	<b>4070</b>	<b>n/a</b>	<b>11/21/2019</b>	<b>7720</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>	

# Prediction Limits

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# Interwell Prediction Limit Summary Table - Significant Results

Plant McManus Client: Southern Company Data: McManus Ash Pond Printed 1/16/2020, 1:20 PM

Constituent	Well	Upper Lim	Lower Lim	Date	Observ.	Sig.	Bg	N Bg	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	MCM-05	0.398	n/a	11/20/2019	0.53	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Boron (mg/L)	MCM-06	0.398	n/a	10/17/2019	1.3	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Boron (mg/L)	MCM-07	0.398	n/a	11/20/2019	1.3	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Boron (mg/L)	MCM-12	0.398	n/a	10/15/2019	1.1	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Boron (mg/L)	MCM-14	0.398	n/a	11/21/2019	1	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Boron (mg/L)	MCM-17	0.398	n/a	11/21/2019	1.5	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Calcium (mg/L)	MCM-05	47.23	n/a	11/20/2019	55.8	Yes	62	2.181	0.8731	1.613	None	ln(x)	0.001075	Param Inter 1 of 2	
Calcium (mg/L)	MCM-06	47.23	n/a	10/17/2019	309	Yes	62	2.181	0.8731	1.613	None	ln(x)	0.001075	Param Inter 1 of 2	
Calcium (mg/L)	MCM-07	47.23	n/a	11/20/2019	308	Yes	62	2.181	0.8731	1.613	None	ln(x)	0.001075	Param Inter 1 of 2	
Calcium (mg/L)	MCM-14	47.23	n/a	11/21/2019	305	Yes	62	2.181	0.8731	1.613	None	ln(x)	0.001075	Param Inter 1 of 2	
Calcium (mg/L)	MCM-17	47.23	n/a	11/21/2019	125	Yes	62	2.181	0.8731	1.613	None	ln(x)	0.001075	Param Inter 1 of 2	
Chloride (mg/L)	MCM-06	2340	n/a	10/17/2019	9930	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Chloride (mg/L)	MCM-07	2340	n/a	11/20/2019	9810	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Chloride (mg/L)	MCM-14	2340	n/a	11/21/2019	8330	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Chloride (mg/L)	MCM-17	2340	n/a	11/21/2019	3890	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Fluoride (mg/L)	MCM-12	0.85	n/a	10/15/2019	1	Yes	67	n/a	n/a	29.85	n/a	n/a	n/a	0.0004267	NP Inter (normality) 1 of 2
pH (S.U.)	MCM-05	5.722	4.736	11/20/2019	6.58	Yes	71	5.229	0.2584	0	None	No	0.0005373	Param Inter 1 of 2	
pH (S.U.)	MCM-06	5.722	4.736	10/17/2019	6.86	Yes	71	5.229	0.2584	0	None	No	0.0005373	Param Inter 1 of 2	
pH (S.U.)	MCM-07	5.722	4.736	11/20/2019	6.27	Yes	71	5.229	0.2584	0	None	No	0.0005373	Param Inter 1 of 2	
pH (S.U.)	MCM-12	5.722	4.736	10/15/2019	6.19	Yes	71	5.229	0.2584	0	None	No	0.0005373	Param Inter 1 of 2	
pH (S.U.)	MCM-14	5.722	4.736	11/21/2019	6.67	Yes	71	5.229	0.2584	0	None	No	0.0005373	Param Inter 1 of 2	
pH (S.U.)	MCM-17	5.722	4.736	11/21/2019	6.44	Yes	71	5.229	0.2584	0	None	No	0.0005373	Param Inter 1 of 2	
Sulfate (mg/L)	MCM-06	498	n/a	10/17/2019	507	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MCM-07	498	n/a	11/20/2019	1550	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Sulfate (mg/L)	MCM-14	498	n/a	11/21/2019	1070	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Total Dissolved Solids [TDS] (mg/L)	MCM-06	4070	n/a	10/17/2019	16100	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Total Dissolved Solids [TDS] (mg/L)	MCM-07	4070	n/a	11/20/2019	16700	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Total Dissolved Solids [TDS] (mg/L)	MCM-14	4070	n/a	11/21/2019	15800	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
Total Dissolved Solids [TDS] (mg/L)	MCM-17	4070	n/a	11/21/2019	7720	Yes	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2

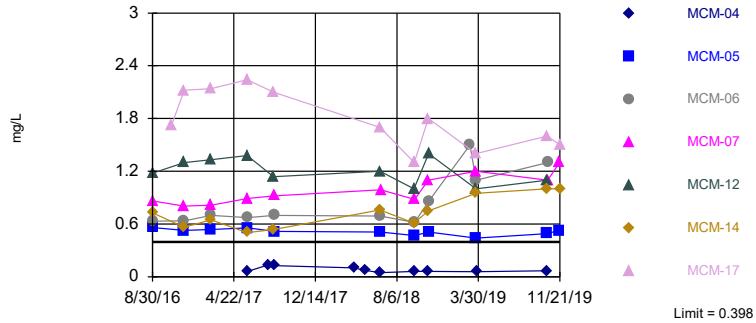
# Interwell Prediction Limit Summary Table - All Results

Plant McManus Client: Southern Company Data: McManus Ash Pond Printed 1/16/2020, 1:20 PM

Constituent	Well	Upper Lim	Lower Lim	Date	Observ.	Sig.	Bg	N Bg	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	MCM-04	0.398	n/a	10/15/2019	0.068	No	61	n/a	n/a	0	n/a	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2
<b>Boron (mg/L)</b>	<b>MCM-05</b>	<b>0.398</b>	<b>n/a</b>	<b>11/20/2019</b>	<b>0.53</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>
<b>Boron (mg/L)</b>	<b>MCM-06</b>	<b>0.398</b>	<b>n/a</b>	<b>10/17/2019</b>	<b>1.3</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>
<b>Boron (mg/L)</b>	<b>MCM-07</b>	<b>0.398</b>	<b>n/a</b>	<b>11/20/2019</b>	<b>1.3</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>
<b>Boron (mg/L)</b>	<b>MCM-12</b>	<b>0.398</b>	<b>n/a</b>	<b>10/15/2019</b>	<b>1.1</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>
<b>Boron (mg/L)</b>	<b>MCM-14</b>	<b>0.398</b>	<b>n/a</b>	<b>11/21/2019</b>	<b>1</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>
<b>Boron (mg/L)</b>	<b>MCM-17</b>	<b>0.398</b>	<b>n/a</b>	<b>11/21/2019</b>	<b>1.5</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>
Calcium (mg/L)	MCM-04	47.23	n/a	10/15/2019	15.5	No	62	2.181	0.8731	1.613	None	ln(x)	0.001075	Param Inter 1 of 2	
<b>Calcium (mg/L)</b>	<b>MCM-05</b>	<b>47.23</b>	<b>n/a</b>	<b>11/20/2019</b>	<b>55.8</b>	<b>Yes</b>	<b>62</b>	<b>2.181</b>	<b>0.8731</b>	<b>1.613</b>	<b>None</b>	<b>ln(x)</b>	<b>0.001075</b>	<b>Param Inter 1 of 2</b>	
<b>Calcium (mg/L)</b>	<b>MCM-06</b>	<b>47.23</b>	<b>n/a</b>	<b>10/17/2019</b>	<b>309</b>	<b>Yes</b>	<b>62</b>	<b>2.181</b>	<b>0.8731</b>	<b>1.613</b>	<b>None</b>	<b>ln(x)</b>	<b>0.001075</b>	<b>Param Inter 1 of 2</b>	
<b>Calcium (mg/L)</b>	<b>MCM-07</b>	<b>47.23</b>	<b>n/a</b>	<b>11/20/2019</b>	<b>308</b>	<b>Yes</b>	<b>62</b>	<b>2.181</b>	<b>0.8731</b>	<b>1.613</b>	<b>None</b>	<b>ln(x)</b>	<b>0.001075</b>	<b>Param Inter 1 of 2</b>	
Calcium (mg/L)	MCM-12	47.23	n/a	10/15/2019	7.9	No	62	2.181	0.8731	1.613	None	ln(x)	0.001075	Param Inter 1 of 2	
<b>Calcium (mg/L)</b>	<b>MCM-14</b>	<b>47.23</b>	<b>n/a</b>	<b>11/21/2019</b>	<b>305</b>	<b>Yes</b>	<b>62</b>	<b>2.181</b>	<b>0.8731</b>	<b>1.613</b>	<b>None</b>	<b>ln(x)</b>	<b>0.001075</b>	<b>Param Inter 1 of 2</b>	
<b>Calcium (mg/L)</b>	<b>MCM-17</b>	<b>47.23</b>	<b>n/a</b>	<b>11/21/2019</b>	<b>125</b>	<b>Yes</b>	<b>62</b>	<b>2.181</b>	<b>0.8731</b>	<b>1.613</b>	<b>None</b>	<b>ln(x)</b>	<b>0.001075</b>	<b>Param Inter 1 of 2</b>	
Chloride (mg/L)	MCM-04	2340	n/a	10/15/2019	46	No	61	n/a	n/a	0	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2	
Chloride (mg/L)	MCM-05	2340	n/a	11/20/2019	1480	No	61	n/a	n/a	0	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2	
<b>Chloride (mg/L)</b>	<b>MCM-06</b>	<b>2340</b>	<b>n/a</b>	<b>10/17/2019</b>	<b>9930</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>	
<b>Chloride (mg/L)</b>	<b>MCM-07</b>	<b>2340</b>	<b>n/a</b>	<b>11/20/2019</b>	<b>9810</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>	
Chloride (mg/L)	MCM-12	2340	n/a	10/15/2019	744	No	61	n/a	n/a	0	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2	
<b>Chloride (mg/L)</b>	<b>MCM-14</b>	<b>2340</b>	<b>n/a</b>	<b>11/21/2019</b>	<b>8330</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>	
<b>Chloride (mg/L)</b>	<b>MCM-17</b>	<b>2340</b>	<b>n/a</b>	<b>11/21/2019</b>	<b>3890</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>	
Fluoride (mg/L)	MCM-04	0.85	n/a	10/15/2019	0.095	No	67	n/a	n/a	29.85	n/a	n/a	0.0004267	NP Inter (normality) 1 of 2	
Fluoride (mg/L)	MCM-05	0.85	n/a	11/20/2019	0.34	No	67	n/a	n/a	29.85	n/a	n/a	0.0004267	NP Inter (normality) 1 of 2	
Fluoride (mg/L)	MCM-06	0.85	n/a	10/17/2019	0.3ND	No	67	n/a	n/a	29.85	n/a	n/a	0.0004267	NP Inter (normality) 1 of 2	
Fluoride (mg/L)	MCM-07	0.85	n/a	11/20/2019	0.3ND	No	67	n/a	n/a	29.85	n/a	n/a	0.0004267	NP Inter (normality) 1 of 2	
<b>Fluoride (mg/L)</b>	<b>MCM-12</b>	<b>0.85</b>	<b>n/a</b>	<b>10/15/2019</b>	<b>1</b>	<b>Yes</b>	<b>67</b>	<b>n/a</b>	<b>n/a</b>	<b>29.85</b>	<b>n/a</b>	<b>n/a</b>	<b>0.0004267</b>	<b>NP Inter (normality) 1 of 2</b>	
Fluoride (mg/L)	MCM-14	0.85	n/a	11/21/2019	0.3ND	No	67	n/a	n/a	29.85	n/a	n/a	0.0004267	NP Inter (normality) 1 of 2	
Fluoride (mg/L)	MCM-17	0.85	n/a	11/21/2019	0.3ND	No	67	n/a	n/a	29.85	n/a	n/a	0.0004267	NP Inter (normality) 1 of 2	
pH (S.U.)	MCM-04	5.722	4.736	11/20/2019	5.03	No	71	5.229	0.2584	0	None	No	0.0005373	Param Inter 1 of 2	
<b>pH (S.U.)</b>	<b>MCM-05</b>	<b>5.722</b>	<b>4.736</b>	<b>11/20/2019</b>	<b>6.58</b>	<b>Yes</b>	<b>71</b>	<b>5.229</b>	<b>0.2584</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.0005373</b>	<b>Param Inter 1 of 2</b>	
<b>pH (S.U.)</b>	<b>MCM-06</b>	<b>5.722</b>	<b>4.736</b>	<b>10/17/2019</b>	<b>6.86</b>	<b>Yes</b>	<b>71</b>	<b>5.229</b>	<b>0.2584</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.0005373</b>	<b>Param Inter 1 of 2</b>	
<b>pH (S.U.)</b>	<b>MCM-07</b>	<b>5.722</b>	<b>4.736</b>	<b>11/20/2019</b>	<b>6.27</b>	<b>Yes</b>	<b>71</b>	<b>5.229</b>	<b>0.2584</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.0005373</b>	<b>Param Inter 1 of 2</b>	
<b>pH (S.U.)</b>	<b>MCM-12</b>	<b>5.722</b>	<b>4.736</b>	<b>10/15/2019</b>	<b>6.19</b>	<b>Yes</b>	<b>71</b>	<b>5.229</b>	<b>0.2584</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.0005373</b>	<b>Param Inter 1 of 2</b>	
<b>pH (S.U.)</b>	<b>MCM-14</b>	<b>5.722</b>	<b>4.736</b>	<b>11/21/2019</b>	<b>6.67</b>	<b>Yes</b>	<b>71</b>	<b>5.229</b>	<b>0.2584</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.0005373</b>	<b>Param Inter 1 of 2</b>	
<b>pH (S.U.)</b>	<b>MCM-17</b>	<b>5.722</b>	<b>4.736</b>	<b>11/21/2019</b>	<b>6.44</b>	<b>Yes</b>	<b>71</b>	<b>5.229</b>	<b>0.2584</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.0005373</b>	<b>Param Inter 1 of 2</b>	
Sulfate (mg/L)	MCM-04	498	n/a	10/15/2019	105	No	61	n/a	n/a	0	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2	
Sulfate (mg/L)	MCM-05	498	n/a	11/20/2019	132	No	61	n/a	n/a	0	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2	
<b>Sulfate (mg/L)</b>	<b>MCM-06</b>	<b>498</b>	<b>n/a</b>	<b>10/17/2019</b>	<b>507</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>	
<b>Sulfate (mg/L)</b>	<b>MCM-07</b>	<b>498</b>	<b>n/a</b>	<b>11/20/2019</b>	<b>1550</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>	
Sulfate (mg/L)	MCM-12	498	n/a	10/15/2019	0.54	No	61	n/a	n/a	0	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2	
<b>Sulfate (mg/L)</b>	<b>MCM-14</b>	<b>498</b>	<b>n/a</b>	<b>11/21/2019</b>	<b>1070</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>	
Sulfate (mg/L)	MCM-17	498	n/a	11/21/2019	428	No	61	n/a	n/a	0	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2	
Total Dissolved Solids [TDS] (mg/L)	MCM-04	4070	n/a	10/15/2019	237	No	61	n/a	n/a	0	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2	
Total Dissolved Solids [TDS] (mg/L)	MCM-05	4070	n/a	11/20/2019	2640	No	61	n/a	n/a	0	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2	
<b>Total Dissolved Solids [TDS] (mg/L)</b>	<b>MCM-06</b>	<b>4070</b>	<b>n/a</b>	<b>10/17/2019</b>	<b>16100</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>	
<b>Total Dissolved Solids [TDS] (mg/L)</b>	<b>MCM-07</b>	<b>4070</b>	<b>n/a</b>	<b>11/20/2019</b>	<b>16700</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>	
Total Dissolved Solids [TDS] (mg/L)	MCM-12	4070	n/a	10/15/2019	1730	No	61	n/a	n/a	0	n/a	n/a	0.0005071	NP Inter (normality) 1 of 2	
<b>Total Dissolved Solids [TDS] (mg/L)</b>	<b>MCM-14</b>	<b>4070</b>	<b>n/a</b>	<b>11/21/2019</b>	<b>15800</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>	
<b>Total Dissolved Solids [TDS] (mg/L)</b>	<b>MCM-17</b>	<b>4070</b>	<b>n/a</b>	<b>11/21/2019</b>	<b>7720</b>	<b>Yes</b>	<b>61</b>	<b>n/a</b>	<b>n/a</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.0005071</b>	<b>NP Inter (normality) 1 of 2</b>	

Exceeds Limit: MCM-05, MCM-06, MCM-07, MCM-12, MCM-14, MCM-17

Prediction Limit  
Interwell Non-parametric

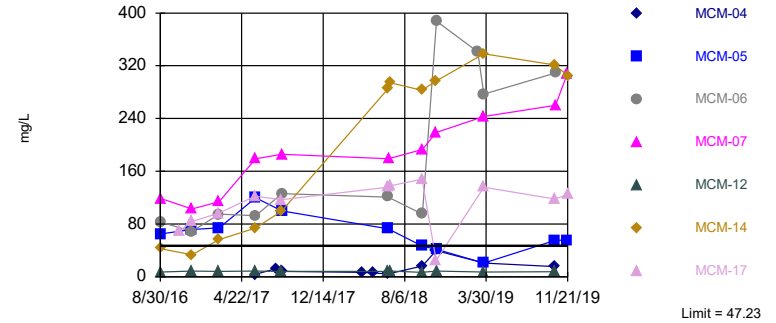


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 61 background values. Annual per-constituent alpha = 0.007076. Individual comparison alpha = 0.0005071 (1 of 2). Comparing 7 points to limit.

Constituent: Boron Analysis Run 1/16/2020 1:16 PM  
Plant McManus Client: Southern Company Data: McManus Ash Pond

Exceeds Limit: MCM-05, MCM-06, MCM-07, MCM-14, MCM-17

Prediction Limit  
Interwell Parametric

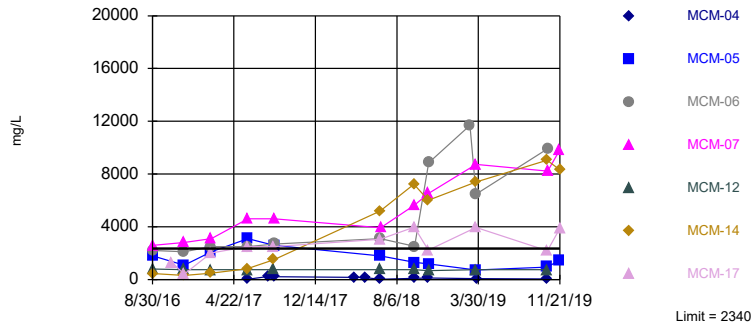


Background Data Summary (based on natural log transformation): Mean=2.181, Std. Dev.=0.8731, n=62, 1.613% NDs. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9481, critical = 0.947. Kappa = 1.917 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.001075. Comparing 7 points to limit.

Constituent: Calcium Analysis Run 1/16/2020 1:16 PM  
Plant McManus Client: Southern Company Data: McManus Ash Pond

Exceeds Limit: MCM-06, MCM-07, MCM-14, MCM-17

Prediction Limit  
Interwell Non-parametric

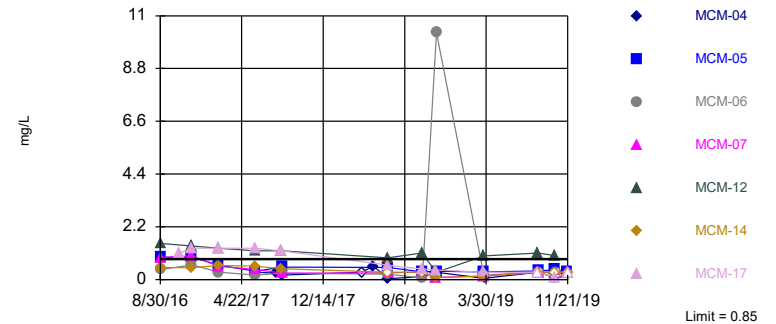


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 61 background values. Annual per-constituent alpha = 0.007076. Individual comparison alpha = 0.0005071 (1 of 2). Comparing 7 points to limit.

Constituent: Chloride Analysis Run 1/16/2020 1:16 PM  
Plant McManus Client: Southern Company Data: McManus Ash Pond

Exceeds Limit: MCM-12

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 67 background values. 29.85% NDs. Annual per-constituent alpha = 0.005958. Individual comparison alpha = 0.0004267 (1 of 2). Comparing 7 points to limit.

Constituent: Fluoride Analysis Run 1/16/2020 1:16 PM  
Plant McManus Client: Southern Company Data: McManus Ash Pond

# Prediction Limit

Constituent: Boron (mg/L) Analysis Run 1/16/2020 1:20 PM

Plant McManus Client: Southern Company Data: McManus Ash Pond

	MCM-01 (bg)	MCM-12	MCM-14	MCM-16 (bg)	MCM-07	MCM-06	MCM-05	MCM-17	MCM-11 (bg)
8/30/2016	0.0325 (J)	1.18	0.726	0.0972 (J)					
8/31/2016					0.863	0.632	0.56		
10/25/2016								1.73	
11/30/2016	0.0334 (J)	1.3	0.565	0.0964	0.804	0.637	0.529	2.12	
2/15/2017	0.254	1.33	0.647	0.398				2.14	
2/16/2017					0.815	0.698	0.539		
5/31/2017		1.38	0.503					2.24	0.0521
6/1/2017	0.0564			0.0776					
6/2/2017					0.891	0.674	0.555		
8/2/2017									0.0392 (J)
8/15/2017		1.14						2.1	0.0448
8/16/2017	0.0435		0.539						
8/17/2017				0.0853	0.922	0.7	0.516		
4/4/2018									0.046
4/5/2018									
5/8/2018									0.048
5/9/2018									
6/19/2018	0.04 (J)	1.2	0.76					1.7	0.04
6/20/2018				0.079		0.69	0.51		
6/21/2018					0.99				
6/28/2018									
9/25/2018		1	0.61						0.043
9/26/2018	0.038 (J)			0.072				1.3	
9/27/2018					0.88	0.62	0.47		
11/6/2018			0.75		1.1			1.8	0.046
11/7/2018	0.037 (J)	1.4		0.074		0.86	0.51		
11/8/2018									
3/6/2019						1.5			
3/24/2019		1	0.95		1.2	1.1	0.44	1.4	
3/25/2019	0.038 (J)			0.067					0.03 (J)
10/15/2019		1.1	1						
10/16/2019	0.036 (J)			0.051			0.49	1.6	0.032 (J)
10/17/2019					1.1	1.3			
11/20/2019					1.3		0.53		
11/21/2019			1					1.5	

# Prediction Limit

Constituent: Boron (mg/L) Analysis Run 1/16/2020 1:20 PM  
Plant McManus Client: Southern Company Data: McManus Ash Pond

	MCM-02 (bg)	MCM-08 (bg)	MCM-04	MCM-15 (bg)
8/30/2016				
8/31/2016				
10/25/2016				
11/30/2016				
2/15/2017				
2/16/2017				
5/31/2017	0.161			
6/1/2017		0.336	0.0608	
6/2/2017				0.0495
8/2/2017	0.158	0.318	0.137	0.0333 (J)
8/15/2017		0.338		
8/16/2017	0.148			
8/17/2017			0.128	0.0593
4/4/2018			0.1	0.065
4/5/2018	0.13	0.39		
5/8/2018			0.074	0.062
5/9/2018	0.12	0.35		
6/19/2018	0.13	0.38		0.064
6/20/2018			0.045	
6/21/2018				
6/28/2018		0.38		
9/25/2018				
9/26/2018	0.1	0.32		0.06
9/27/2018			0.06	
11/6/2018			0.06	
11/7/2018	0.1			0.062 (J)
11/8/2018		0.37		
3/6/2019				
3/24/2019				
3/25/2019	0.091	0.34	0.058	0.057
10/15/2019			0.068	0.046
10/16/2019	0.085	0.39		
10/17/2019				
11/20/2019				
11/21/2019				

# Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 1/16/2020 1:20 PM

Plant McManus Client: Southern Company Data: McManus Ash Pond

	MCM-01 (bg)	MCM-16 (bg)	MCM-12	MCM-14	MCM-06	MCM-07	MCM-05	MCM-17	MCM-11 (bg)
8/30/2016	7.3	4.02	7.05	42.8					
8/31/2016					82.8	119	65		
10/25/2016								69.4	
11/30/2016	10.8	4.87	8.69	33.2	68.7	103	71.7	83.9	
2/15/2017	14.3	6.61	8.34	56.1				96.3	
2/16/2017					94.8	114	74		
5/31/2017			8.85	73.6				122	18.6
6/1/2017	12.7 (J)	6.42							
6/2/2017					92.5	179	120		
8/2/2017									18.5
8/15/2017			8.05					117	4.09
8/16/2017	8.7			99.6					
8/17/2017		5.62			126	186	100		
4/4/2018									<25
4/5/2018									
5/8/2018									18.4 (J)
5/9/2018									
6/19/2018	11.6 (J)		8.3	285				136	4.3
6/20/2018		5.7			121		72.8		
6/21/2018						179			
6/28/2018	13		8.9	294				138	
9/25/2018			6.8	283					6.2 (D)
9/26/2018	12.8 (J)	5.3						148	
9/27/2018					95.1	193	46.6		
11/6/2018				297		219		24.7	1.8
11/7/2018	11.9	5.3	8.5		387.5 (D)		41.8		
11/8/2018									
3/6/2019					341				
3/24/2019			7.4	338	277	243	20.9 (J)	136	
3/25/2019	12.6 (J)	5.7							2.5 (D)
10/15/2019			7.9	321					
10/16/2019	13.6	4.8					55.2	118	2.2
10/17/2019					309	260			
11/20/2019						308	55.8		
11/21/2019				305				125	

# Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 1/16/2020 1:20 PM  
Plant McManus Client: Southern Company Data: McManus Ash Pond

	MCM-02 (bg)	MCM-08 (bg)	MCM-04	MCM-15 (bg)
8/30/2016				
8/31/2016				
10/25/2016				
11/30/2016				
2/15/2017				
2/16/2017				
5/31/2017	5.9			
6/1/2017		27.3	3.65	
6/2/2017				2.77
8/2/2017	4.69	32.7	12.4	1.27
8/15/2017		27.7		
8/16/2017	5.25			
8/17/2017			8.17	5.53
4/4/2018			6.8	6.5
4/5/2018	5	39.4		
5/8/2018			5.7	6.7
5/9/2018	4.7	37		
6/19/2018	4.8	39.8		7.4
6/20/2018			4.3	
6/21/2018				
6/28/2018		42.9		
9/25/2018				
9/26/2018	4.6	42.6		8.5 (J)
9/27/2018			16.4 (J)	
11/6/2018			39.5	
11/7/2018	4.6			9.8
11/8/2018		41.4		
3/6/2019				
3/24/2019				
3/25/2019	4.7	50.3	20.8 (J)	7.8
10/15/2019			15.5	6.7
10/16/2019	4.9	53		
10/17/2019				
11/20/2019				
11/21/2019				

# Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 1/16/2020 1:20 PM

Plant McManus Client: Southern Company Data: McManus Ash Pond

	MCM-01 (bg)	MCM-12	MCM-14	MCM-16 (bg)	MCM-07	MCM-06	MCM-05	MCM-17	MCM-11 (bg)
8/30/2016	9.7	800	450	26					
8/31/2016					2600	2200	1800		
10/25/2016								1300	
11/30/2016	19	760	310	27	2800	2100	1100	400	
2/15/2017	21	740	490	30				2000	
2/16/2017					3100	2500	2100		
5/31/2017		740	820					2500	98
6/1/2017	12			27					
6/2/2017					4600	2500	3100		
8/2/2017									57
8/15/2017		750						2500	15
8/16/2017	14		1500						
8/17/2017				32	4600	2700	2600		
4/4/2018									69
4/5/2018									
5/8/2018									72.3
5/9/2018									
6/19/2018	24.4	760	5180					3050	17.3
6/20/2018				30		3100	1800		
6/21/2018					3920				
6/28/2018									
9/25/2018		752 (D)	7220						31.3
9/26/2018	23.4			28.4				3965 (D)	
9/27/2018					5660 (D)	2510 (D)	1300		
11/6/2018			6020		6520			2230	9.8
11/7/2018	21.8	665		25.1		8860	1180		
11/8/2018									
3/6/2019						11700			
3/24/2019		744	7400		8720	6470	717	3960	
3/25/2019	19.4			21.8					12.9
10/15/2019		744	9050						
10/16/2019	21.4			20			941 (D)	2181.5 (D)	12.2
10/17/2019					8210	9930			
11/20/2019					9810		1480		
11/21/2019			8330					3890	



# Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 1/16/2020 1:20 PM  
Plant McManus Client: Southern Company Data: McManus Ash Pond

	MCM-02 (bg)	MCM-08 (bg)	MCM-04	MCM-15 (bg)
8/30/2016				
8/31/2016				
10/25/2016				
11/30/2016				
2/15/2017				
2/16/2017				
5/31/2017	39			
6/1/2017		1400	22	
6/2/2017				11
8/2/2017	42	1600	230	3.2
8/15/2017		1700		
8/16/2017	41			
8/17/2017			210	12
4/4/2018			156	13.4
4/5/2018	40.2	1900		
5/8/2018			140	13.2
5/9/2018	40.6	1870		
6/19/2018	37.7	1890		13.7
6/20/2018			27.5	
6/21/2018				
6/28/2018		1910		
9/25/2018				
9/26/2018	33.4	2040		18.5
9/27/2018			101	
11/6/2018			107	
11/7/2018	30.7			20.2
11/8/2018		2050		
3/6/2019				
3/24/2019				
3/25/2019	33.5	2340	78.5	19.7
10/15/2019			46	17.1
10/16/2019	33.1	1331 (D)		
10/17/2019				
11/20/2019				
11/21/2019				

# Prediction Limit

Constituent: Fluoride (mg/L) Analysis Run 1/16/2020 1:20 PM

Plant McManus Client: Southern Company Data: McManus Ash Pond

	MCM-01 (bg)	MCM-12	MCM-14	MCM-16 (bg)	MCM-07	MCM-06	MCM-05	MCM-17	MCM-02 (bg)
8/30/2016	0.03 (J)	1.5	0.5	0.04 (J)					
8/31/2016					0.92	0.41	0.93		
10/25/2016								1.1	
11/30/2016	0.04 (J)	1.4	0.49	0.18 (J)	0.99	0.61	0.93	1.3	
2/15/2017	0.007 (J)	1.3	0.58	0.02 (J)				1.3	
2/16/2017					0.54	0.3 (J)	0.6		
5/31/2017		1.2	0.56					1.3	0.01 (J)
6/1/2017	<0.3			0.005 (J)					
6/2/2017					0.42	0.19 (J)	0.34		
8/2/2017									0.14 (J)
8/15/2017		1.2						1.2	
8/16/2017	0.03 (J)		0.45						0.13 (J)
8/17/2017				0.04 (J)	0.27 (J)	0.26 (J)	0.52		
4/4/2018									
4/5/2018									<0.3
5/8/2018									
5/9/2018									<0.3
6/19/2018	<0.3	0.91	<0.3					0.6	0.065 (J)
6/20/2018				0.038 (J)		0.22 (J)	0.5		
6/21/2018					0.28 (J)				
6/28/2018									
9/25/2018		1.1	<0.3						
9/26/2018	0.12 (J)			0.029				0.44 (D)	0.029
9/27/2018					0.32 (D)	0.068 (J)	0.32		
11/6/2018			0.084 (J)		0.086 (J)			0.4	
11/7/2018	<0.3	<0.3		<0.3		10.3	0.35		<0.3
11/8/2018									
3/6/2019						<25 (o)			
3/24/2019		0.99	0.14 (J)		0.14 (J)	0.19 (J)	0.32	0.31	
3/25/2019	0.038 (J)			0.041 (J)					0.039 (J)
8/26/2019			<0.3						
8/27/2019	<0.3	1.1		<0.3				<0.3	
8/28/2019					<0.3	<0.3	0.36		<0.3
10/15/2019		1	<0.3						
10/16/2019	0.046 (JD)			0.044 (J)			0.41	0.083 (J)	0.044 (JD)
10/17/2019					<0.3	<0.3			
11/20/2019					<0.3		0.34		
11/21/2019			<0.3					<0.3	

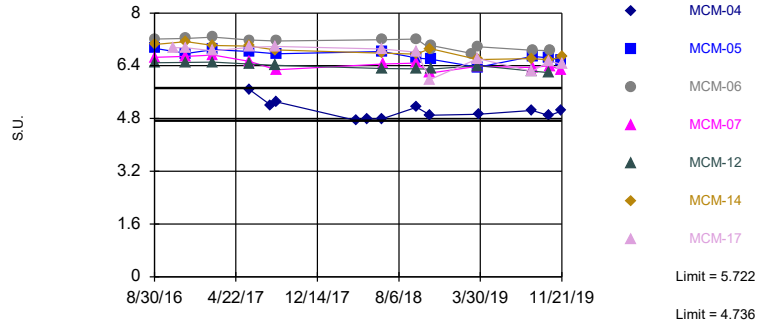
# Prediction Limit

Constituent: Fluoride (mg/L) Analysis Run 1/16/2020 1:20 PM  
Plant McManus Client: Southern Company Data: McManus Ash Pond

	MCM-11 (bg)	MCM-04	MCM-08 (bg)	MCM-15 (bg)
8/30/2016				
8/31/2016				
10/25/2016				
11/30/2016				
2/15/2017				
2/16/2017				
5/31/2017	0.85			
6/1/2017		<0.3	<0.3	
6/2/2017				<0.3
8/2/2017	0.69	0.27 (J)	0.16 (J)	0.05 (J)
8/15/2017	0.29 (J)		0.21 (J)	
8/16/2017				
8/17/2017		0.18 (J)		<0.3
4/4/2018	0.32	<0.3		<0.3
4/5/2018			<0.3	
5/8/2018	0.63	0.56		<0.3
5/9/2018			0.23 (J)	
6/19/2018	0.17 (J)		0.043 (J)	0.057 (J)
6/20/2018		0.033 (J)		
6/21/2018				
6/28/2018			0.12 (J)	
9/25/2018	0.15 (J)			
9/26/2018			0.029	0.029
9/27/2018		0.12 (J)		
11/6/2018	<0.3	<0.3		
11/7/2018				<0.3
11/8/2018			0.04 (J)	
3/6/2019				
3/24/2019				
3/25/2019	0.12 (J)	0.055 (J)	0.12 (J)	0.036 (J)
8/26/2019				
8/27/2019		<0.3		<0.3
8/28/2019	0.068 (J)		<0.3	
10/15/2019		0.095 (J)		0.14 (J)
10/16/2019	0.1 (J)		0.1 (J)	
10/17/2019				
11/20/2019				
11/21/2019				

Exceeds Limits: MCM-05, MCM-06, MCM-07, MCM-12, MCM-14, MCM-17

Prediction Limit  
Interwell Parametric

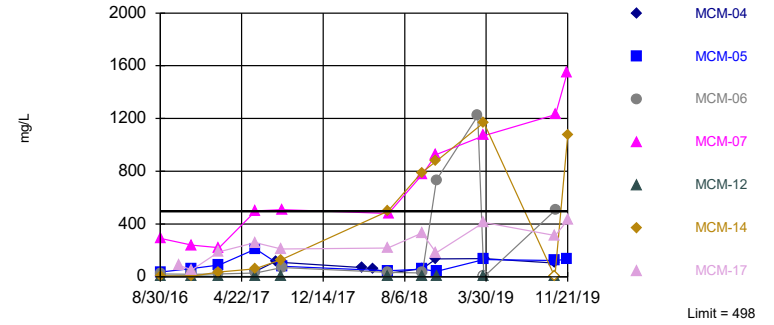


Background Data Summary: Mean=5.229, Std. Dev.=0.2584, n=71. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9888, critical = 0.953. Kappa = 1.907 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.0005373. Comparing 7 points to limit.

Constituent: pH Analysis Run 1/16/2020 1:16 PM  
Plant McManus Client: Southern Company Data: McManus Ash Pond

Exceeds Limit: MCM-06, MCM-07, MCM-14

Prediction Limit  
Interwell Non-parametric

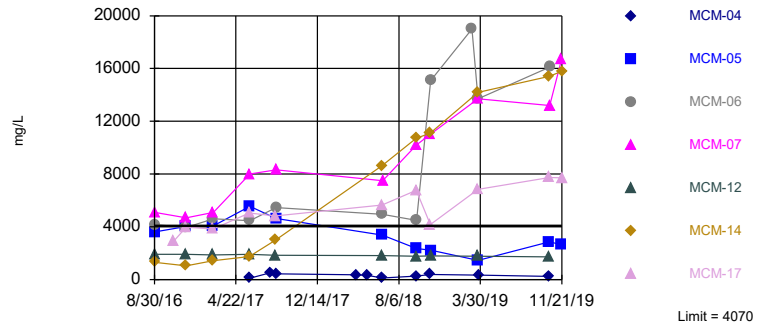


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 61 background values. Annual per-constituent alpha = 0.007076. Individual comparison alpha = 0.0005071 (1 of 2). Comparing 7 points to limit.

Constituent: Sulfate Analysis Run 1/16/2020 1:16 PM  
Plant McManus Client: Southern Company Data: McManus Ash Pond

Exceeds Limit: MCM-06, MCM-07, MCM-14, MCM-17

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 61 background values. Annual per-constituent alpha = 0.007076. Individual comparison alpha = 0.0005071 (1 of 2). Comparing 7 points to limit.

Constituent: Total Dissolved Solids [TDS] Analysis Run 1/16/2020 1:16 PM  
Plant McManus Client: Southern Company Data: McManus Ash Pond

# Prediction Limit

Constituent: pH (S.U.) Analysis Run 1/16/2020 1:20 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

	MCM-01 (bg)	MCM-12	MCM-14	MCM-16 (bg)	MCM-06	MCM-05	MCM-07	MCM-17	MCM-11 (bg)
8/30/2016	5.66 (D)	6.49 (D)	7.04 (D)	5.18 (D)					
8/31/2016					7.21 (D)	6.93 (D)	6.66 (D)		
10/25/2016								6.95 (D)	
11/30/2016	5.36 (D)	6.5 (D)	7.13 (D)	4.96 (D)	7.23 (D)	6.77 (D)	6.69 (D)	6.95 (D)	
2/15/2017	5.25 (D)	6.51 (D)	7.02 (D)	5.13 (D)				6.85 (D)	
2/16/2017					7.27 (D)	6.89 (D)	6.72 (D)		
5/31/2017		6.45 (D)	7 (D)					6.96 (D)	4.855 (D)
6/1/2017	5.59 (D)			4.99 (D)					
6/2/2017					7.18 (D)	6.83 (D)	6.53 (D)		
8/2/2017									5.19 (D)
8/15/2017		6.41 (D)						6.99 (D)	5.19 (D)
8/16/2017	5.58 (D)		6.88 (D)						
8/17/2017				4.68 (D)	7.15 (D)	6.76 (D)	6.28 (D)		
4/4/2018									5.19 (D)
4/5/2018									
5/8/2018									5.3 (D)
5/9/2018									
6/19/2018	5.51 (D)	6.32 (D)	6.78 (D)					6.91 (D)	5.15 (D)
6/20/2018				4.77 (D)	7.19 (D)	6.83 (D)			
6/21/2018							6.45 (D)		
6/28/2018									
9/25/2018		6.31 (D)	6.75 (D)						5.13 (D)
9/26/2018	5.32 (D)			4.65 (D)				6.81 (D)	
9/27/2018					7.21 (D)	6.64 (D)	6.48 (D)		
11/6/2018			6.92 (D)				6.18 (D)	5.99 (D)	5.08 (D)
11/7/2018	5.72 (D)	6.3 (D)		4.99 (D)	6.91 (D)	6.6 (D)			
11/8/2018					7.02				
3/6/2019					6.77				
3/24/2019		6.4 (D)	6.59 (D)		6.98 (D)	6.355 (D)	6.385 (D)	6.62 (D)	
3/25/2019	5.75 (D)			5.13 (D)					5.05 (D)
8/26/2019			6.62						
8/27/2019	5.58	6.24		4.88				6.23	
8/28/2019					6.87	6.69	6.35		4.87
10/15/2019		6.19	6.58						
10/16/2019	5.72			4.89		6.64		6.54	5.05
10/17/2019					6.86		6.4		
11/19/2019									
11/20/2019	5.77					6.58	6.27		
11/21/2019			6.67					6.44	

# Prediction Limit

Constituent: pH (S.U.) Analysis Run 1/16/2020 1:20 PM  
Plant McManus Client: Southern Company Data: McManus Ash Pond

	MCM-02 (bg)	MCM-04	MCM-08 (bg)	MCM-15 (bg)
8/30/2016				
8/31/2016				
10/25/2016				
11/30/2016				
2/15/2017				
2/16/2017				
5/31/2017	5.06 (D)			
6/1/2017		5.68 (D)	5.41 (D)	
6/2/2017				5.31 (D)
8/2/2017	5 (D)	5.2 (D)	5.31 (D)	5.05 (D)
8/15/2017			5.4 (D)	
8/16/2017	4.98 (D)			
8/17/2017		5.31 (D)		5.52 (D)
4/4/2018		4.74 (D)		5.45 (D)
4/5/2018	5.02 (D)		5.38 (D)	
5/8/2018		4.78 (D)		5.54 (D)
5/9/2018	4.96 (D)		5.38 (D)	
6/19/2018	5.02 (D)		5.32 (D)	5.6 (D)
6/20/2018		4.79 (D)		
6/21/2018				
6/28/2018			5.41	
9/25/2018				
9/26/2018	5.06 (D)		5.31 (D)	5.17 (D)
9/27/2018		5.14 (D)		
11/6/2018		4.9 (D)		
11/7/2018	5.03 (D)			5.47 (D)
11/8/2018			5.37 (D)	
3/6/2019				
3/24/2019				5.4
3/25/2019	5.08 (D)	4.93 (D)	5.34 (D)	5.4
8/26/2019				
8/27/2019		5.05		5.35
8/28/2019	4.99		5.11	
10/15/2019		4.89		5.32
10/16/2019	4.98		5.23	
10/17/2019				
11/19/2019	5.11		5.29	
11/20/2019		5.03		
11/21/2019				

# Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 1/16/2020 1:20 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

	MCM-01 (bg)	MCM-12	MCM-14	MCM-16 (bg)	MCM-07	MCM-06	MCM-05	MCM-17	MCM-11 (bg)
8/30/2016	17	4.3	6.4	24					
8/31/2016					290	21	37		
10/25/2016								84	
11/30/2016	33	7.6	4.5	26	240	19	63	52	
2/15/2017	83	3	37	30				190	
2/16/2017					220	22	90		
5/31/2017		2.5	61					260	40
6/1/2017	51			24					
6/2/2017					500	28	210		
8/2/2017									34
8/15/2017		3.2						210	24
8/16/2017	36		130						
8/17/2017				26	510	69	80		
4/4/2018									33.9
4/5/2018									
5/8/2018									35.7
5/9/2018									
6/19/2018	50.3	1.6	498					218	23.7
6/20/2018				31.2		33	46 (J)		
6/21/2018					481				
6/28/2018									
9/25/2018		1	790						25.6
9/26/2018	54.1			36.8				333 (D)	
9/27/2018					777 (D)	29.4 (D)	58.5 (J)		
11/6/2018			875		926			182	25.2
11/7/2018	45.6	0.41 (J)		35		734	41.3 (J)		
11/8/2018									
3/6/2019						1220 (J)			
3/24/2019		1.5	1170		1070	<1	131	413	
3/25/2019	43			40.1					24.9
10/15/2019		0.54 (J)	<1						
10/16/2019	31.9			28.5			122.5 (D)	312.5 (D)	17.4
10/17/2019					1230	507			
11/20/2019					1550		132		
11/21/2019			1070					428	

# Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 1/16/2020 1:20 PM  
Plant McManus Client: Southern Company Data: McManus Ash Pond

	MCM-02 (bg)	MCM-08 (bg)	MCM-04	MCM-15 (bg)
8/30/2016				
8/31/2016				
10/25/2016				
11/30/2016				
2/15/2017				
2/16/2017				
5/31/2017	46			
6/1/2017		250	42	
6/2/2017				13
8/2/2017	43	290	120	14
8/15/2017		360		
8/16/2017	41			
8/17/2017			110	14
4/4/2018			70.6	13.4
4/5/2018	33.4	350		
5/8/2018			61.4	14.8
5/9/2018	36	353		
6/19/2018	35.5	359		15.5
6/20/2018			25.3	
6/21/2018				
6/28/2018		352		
9/25/2018				
9/26/2018	39.6	423		23
9/27/2018			63.4	
11/6/2018			136	
11/7/2018	35.8			22.2
11/8/2018		498		
3/6/2019				
3/24/2019				
3/25/2019	34.2	467	137	22.4
10/15/2019			105	17.9
10/16/2019	24.4	286.5 (D)		
10/17/2019				
11/20/2019				
11/21/2019				



# Prediction Limit

Constituent: Total Dissolved Solids [TDS] (mg/L) Analysis Run 1/16/2020 1:20 PM

Plant McManus Client: Southern Company Data: McManus Ash Pond

	MCM-01 (bg)	MCM-12	MCM-14	MCM-16 (bg)	MCM-07	MCM-06	MCM-05	MCM-17	MCM-11 (bg)
8/30/2016	86	1910	1310	99					
8/31/2016					5100	4160	3620		
10/25/2016								2900	
11/30/2016	131	1910	1050	111	4680	3950	4030	3970	
2/15/2017	212	1870	1440	170				3820	
2/16/2017					5080	4600	4080		
5/31/2017		1920	1740					5050	257
6/1/2017	103			98					
6/2/2017					8000	4470	5560		
8/2/2017									183
8/15/2017		1840						4820	90
8/16/2017	65		3010						
8/17/2017				84	8320	5450	4620		
4/4/2018									197
4/5/2018									
5/8/2018									225
5/9/2018									
6/19/2018	142	1820	8630					5640	112
6/20/2018				123		4940	3370		
6/21/2018					7500				
6/28/2018									
9/25/2018		1760	10700						137
9/26/2018	133			117				6770 (D)	
9/27/2018					10200	4480	2360		
11/6/2018			11100		11000			4160	89
11/7/2018	121	1800		120		15100	2230		
11/8/2018									
3/6/2019						19000			
3/24/2019		1770	14200		13700	13700	1450	6840	
3/25/2019	116			101					74
10/15/2019		1730	15400						
10/16/2019	104			95			2860	7740	82
10/17/2019					13200	16100			
11/20/2019					16700		2640		
11/21/2019			15800					7720	

# Prediction Limit

Constituent: Total Dissolved Solids [TDS] (mg/L) Analysis Run 1/16/2020 1:20 PM

Plant McManus Client: Southern Company Data: McManus Ash Pond

	MCM-02 (bg)	MCM-08 (bg)	MCM-04	MCM-15 (bg)
8/30/2016				
8/31/2016				
10/25/2016				
11/30/2016				
2/15/2017				
2/16/2017				
5/31/2017	123			
6/1/2017		2970	97	
6/2/2017				69
8/2/2017	136	3100	538	35
8/15/2017		3160		
8/16/2017	124			
8/17/2017			445	51
4/4/2018			365	90
4/5/2018	128	3460		
5/8/2018			304	89
5/9/2018	127	3680		
6/19/2018	143	3600		110
6/20/2018			114	
6/21/2018				
6/28/2018		3440		
9/25/2018				
9/26/2018	132	3610		124
9/27/2018			255	
11/6/2018			388	
11/7/2018	134			125
11/8/2018		3630		
3/6/2019				
3/24/2019				
3/25/2019	111	4020	327	98
10/15/2019			237	107
10/16/2019	96	4070		
10/17/2019				
11/20/2019				
11/21/2019				

# Trend Tests

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# Trend Tests Summary Table - PL Exceedances - Significant Results

Plant McManus Client: Southern Company Data: McManus Ash Pond Printed 1/16/2020, 1:59 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Boron (mg/L)	MCM-02 (bg)	-0.03842	-41	-30	Yes	10	0	n/a	n/a	0.01	NP
Boron (mg/L)	MCM-07	0.1457	42	34	Yes	11	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MCM-06	80.44	35	34	Yes	11	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MCM-07	53.98	48	34	Yes	11	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MCM-08 (bg)	10.82	45	34	Yes	11	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MCM-14	101.2	54	38	Yes	12	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MCM-06	1892	42	34	Yes	11	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MCM-07	2080	48	34	Yes	11	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MCM-14	2938	49	34	Yes	11	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MCM-15 (bg)	4.804	33	30	Yes	10	0	n/a	n/a	0.01	NP
Fluoride (mg/L)	MCM-11 (bg)	-0.2348	-41	-34	Yes	11	9.091	n/a	n/a	0.01	NP
pH (S.U.)	MCM-05	-0.1046	-44	-38	Yes	12	0	n/a	n/a	0.01	NP
pH (S.U.)	MCM-06	-0.1325	-51	-43	Yes	13	0	n/a	n/a	0.01	NP
pH (S.U.)	MCM-12	-0.0949	-43	-34	Yes	11	0	n/a	n/a	0.01	NP
pH (S.U.)	MCM-14	-0.1491	-50	-38	Yes	12	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	MCM-06	42.24	37	34	Yes	11	9.091	n/a	n/a	0.01	NP
Sulfate (mg/L)	MCM-07	350	45	34	Yes	11	0	n/a	n/a	0.01	NP
Total Dissolved Solids [TDS] (mg/L)	MCM-06	4220	37	34	Yes	11	0	n/a	n/a	0.01	NP
Total Dissolved Solids [TDS] (mg/L)	MCM-07	3348	45	34	Yes	11	0	n/a	n/a	0.01	NP
Total Dissolved Solids [TDS] (mg/L)	MCM-08 (bg)	463.1	43	34	Yes	11	0	n/a	n/a	0.01	NP
Total Dissolved Solids [TDS] (mg/L)	MCM-14	5116	53	34	Yes	11	0	n/a	n/a	0.01	NP
Total Dissolved Solids [TDS] (mg/L)	MCM-17	1346	41	34	Yes	11	0	n/a	n/a	0.01	NP

# Trend Tests Summary Table - PL Exceedances - All Results

Plant McManus Client: Southern Company Data: McManus Ash Pond Printed 1/16/2020, 2:00 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Boron (mg/L)	MCM-01 (bg)	-0.003017	-8	-30	No	10	0	n/a	n/a	0.01	NP
<b>Boron (mg/L)</b>	<b>MCM-02 (bg)</b>	<b>-0.03842</b>	<b>-41</b>	<b>-30</b>	<b>Yes</b>	<b>10</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.01</b>	<b>NP</b>
Boron (mg/L)	MCM-05	-0.0184	-28	-34	No	11	0	n/a	n/a	0.01	NP
Boron (mg/L)	MCM-06	0.1827	33	34	No	11	0	n/a	n/a	0.01	NP
<b>Boron (mg/L)</b>	<b>MCM-07</b>	<b>0.1457</b>	<b>42</b>	<b>34</b>	<b>Yes</b>	<b>11</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.01</b>	<b>NP</b>
Boron (mg/L)	MCM-08 (bg)	0.01494	17	34	No	11	0	n/a	n/a	0.01	NP
Boron (mg/L)	MCM-11 (bg)	-0.005899	-16	-30	No	10	0	n/a	n/a	0.01	NP
Boron (mg/L)	MCM-12	-0.06959	-10	-30	No	10	0	n/a	n/a	0.01	NP
Boron (mg/L)	MCM-14	0.1277	30	34	No	11	0	n/a	n/a	0.01	NP
Boron (mg/L)	MCM-15 (bg)	0	0	30	No	10	0	n/a	n/a	0.01	NP
Boron (mg/L)	MCM-17	-0.2084	-25	-34	No	11	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MCM-01 (bg)	0.9733	19	34	No	11	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MCM-02 (bg)	-0.2607	-15	-30	No	10	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MCM-05	-11.98	-19	-34	No	11	0	n/a	n/a	0.01	NP
<b>Calcium (mg/L)</b>	<b>MCM-06</b>	<b>80.44</b>	<b>35</b>	<b>34</b>	<b>Yes</b>	<b>11</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.01</b>	<b>NP</b>
<b>Calcium (mg/L)</b>	<b>MCM-07</b>	<b>53.98</b>	<b>48</b>	<b>34</b>	<b>Yes</b>	<b>11</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.01</b>	<b>NP</b>
<b>Calcium (mg/L)</b>	<b>MCM-08 (bg)</b>	<b>10.82</b>	<b>45</b>	<b>34</b>	<b>Yes</b>	<b>11</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.01</b>	<b>NP</b>
Calcium (mg/L)	MCM-11 (bg)	-7.391	-29	-30	No	10	10	n/a	n/a	0.01	NP
<b>Calcium (mg/L)</b>	<b>MCM-14</b>	<b>101.2</b>	<b>54</b>	<b>38</b>	<b>Yes</b>	<b>12</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.01</b>	<b>NP</b>
Calcium (mg/L)	MCM-15 (bg)	3.487	30	30	No	10	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MCM-17	17.21	25	38	No	12	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MCM-01 (bg)	3.053	17	30	No	10	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MCM-02 (bg)	-4.636	-29	-30	No	10	0	n/a	n/a	0.01	NP
<b>Chloride (mg/L)</b>	<b>MCM-06</b>	<b>1892</b>	<b>42</b>	<b>34</b>	<b>Yes</b>	<b>11</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.01</b>	<b>NP</b>
<b>Chloride (mg/L)</b>	<b>MCM-07</b>	<b>2080</b>	<b>48</b>	<b>34</b>	<b>Yes</b>	<b>11</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.01</b>	<b>NP</b>
Chloride (mg/L)	MCM-08 (bg)	354.8	31	34	No	11	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MCM-11 (bg)	-34.37	-25	-30	No	10	0	n/a	n/a	0.01	NP
<b>Chloride (mg/L)</b>	<b>MCM-14</b>	<b>2938</b>	<b>49</b>	<b>34</b>	<b>Yes</b>	<b>11</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.01</b>	<b>NP</b>
<b>Chloride (mg/L)</b>	<b>MCM-15 (bg)</b>	<b>4.804</b>	<b>33</b>	<b>30</b>	<b>Yes</b>	<b>10</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.01</b>	<b>NP</b>
Chloride (mg/L)	MCM-17	805	26	34	No	11	0	n/a	n/a	0.01	NP
Fluoride (mg/L)	MCM-01 (bg)	0.007383	16	34	No	11	36.36	n/a	n/a	0.01	NP
Fluoride (mg/L)	MCM-02 (bg)	0	3	34	No	11	36.36	n/a	n/a	0.01	NP
Fluoride (mg/L)	MCM-08 (bg)	-0.05379	-20	-38	No	12	25	n/a	n/a	0.01	NP
<b>Fluoride (mg/L)</b>	<b>MCM-11 (bg)</b>	<b>-0.2348</b>	<b>-41</b>	<b>-34</b>	<b>Yes</b>	<b>11</b>	<b>9.091</b>	<b>n/a</b>	<b>n/a</b>	<b>0.01</b>	<b>NP</b>
Fluoride (mg/L)	MCM-15 (bg)	0	-8	-34	No	11	54.55	n/a	n/a	0.01	NP
pH (S.U.)	MCM-01 (bg)	0.07982	26	38	No	12	0	n/a	n/a	0.01	NP
pH (S.U.)	MCM-02 (bg)	0.01857	11	38	No	12	0	n/a	n/a	0.01	NP
<b>pH (S.U.)</b>	<b>MCM-05</b>	<b>-0.1046</b>	<b>-44</b>	<b>-38</b>	<b>Yes</b>	<b>12</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.01</b>	<b>NP</b>
<b>pH (S.U.)</b>	<b>MCM-06</b>	<b>-0.1325</b>	<b>-51</b>	<b>-43</b>	<b>Yes</b>	<b>13</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.01</b>	<b>NP</b>
pH (S.U.)	MCM-07	-0.1112	-36	-38	No	12	0	n/a	n/a	0.01	NP
pH (S.U.)	MCM-08 (bg)	-0.04861	-39	-43	No	13	0	n/a	n/a	0.01	NP
pH (S.U.)	MCM-11 (bg)	-0.07565	-23	-34	No	11	0	n/a	n/a	0.01	NP
<b>pH (S.U.)</b>	<b>MCM-12</b>	<b>-0.0949</b>	<b>-43</b>	<b>-34</b>	<b>Yes</b>	<b>11</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.01</b>	<b>NP</b>
<b>pH (S.U.)</b>	<b>MCM-14</b>	<b>-0.1491</b>	<b>-50</b>	<b>-38</b>	<b>Yes</b>	<b>12</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.01</b>	<b>NP</b>
pH (S.U.)	MCM-15 (bg)	-0.05148	-5	-38	No	12	0	n/a	n/a	0.01	NP
pH (S.U.)	MCM-17	-0.1687	-37	-38	No	12	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	MCM-01 (bg)	-0.3824	-1	-30	No	10	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	MCM-02 (bg)	-6.539	-29	-30	No	10	0	n/a	n/a	0.01	NP
<b>Sulfate (mg/L)</b>	<b>MCM-06</b>	<b>42.24</b>	<b>37</b>	<b>34</b>	<b>Yes</b>	<b>11</b>	<b>9.091</b>	<b>n/a</b>	<b>n/a</b>	<b>0.01</b>	<b>NP</b>
<b>Sulfate (mg/L)</b>	<b>MCM-07</b>	<b>350</b>	<b>45</b>	<b>34</b>	<b>Yes</b>	<b>11</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.01</b>	<b>NP</b>
Sulfate (mg/L)	MCM-08 (bg)	89.22	23	34	No	11	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	MCM-11 (bg)	-7.527	-25	-30	No	10	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	MCM-14	373.7	33	34	No	11	9.091	n/a	n/a	0.01	NP
Sulfate (mg/L)	MCM-15 (bg)	4.803	30	30	No	10	0	n/a	n/a	0.01	NP
Total Dissolved Solids [TDS] (mg/L)	MCM-01 (bg)	-6.479	-3	-30	No	10	0	n/a	n/a	0.01	NP

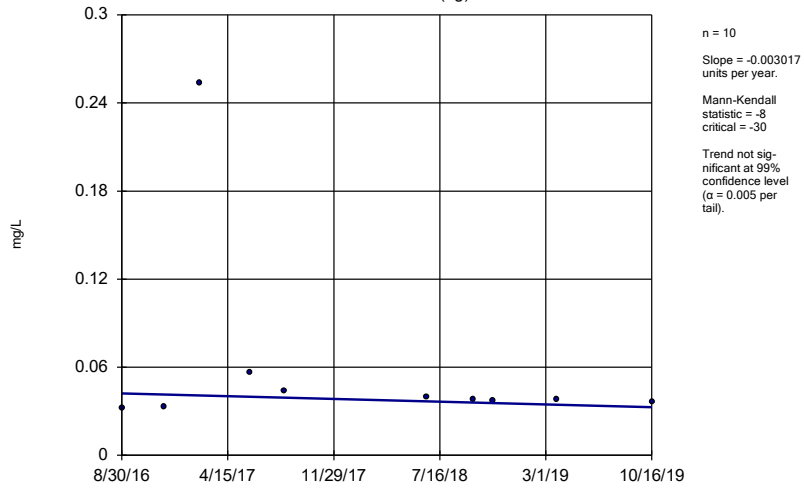
# Trend Tests Summary Table - PL Exceedances - All Results

Plant McManus    Client: Southern Company    Data: McManus Ash Pond    Printed 1/16/2020, 2:00 PM

<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Xform</u>	<u>Alpha</u>	<u>Method</u>
Total Dissolved Solids [TDS] (mg/L)	MCM-02 (bg)	-6.606	-5	-30	No	10	0	n/a	n/a	0.01	NP
<b>Total Dissolved Solids [TDS] (mg/L)</b>	<b>MCM-06</b>	<b>4220</b>	<b>37</b>	<b>34</b>	<b>Yes</b>	<b>11</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.01</b>	<b>NP</b>
<b>Total Dissolved Solids [TDS] (mg/L)</b>	<b>MCM-07</b>	<b>3348</b>	<b>45</b>	<b>34</b>	<b>Yes</b>	<b>11</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.01</b>	<b>NP</b>
<b>Total Dissolved Solids [TDS] (mg/L)</b>	<b>MCM-08 (bg)</b>	<b>463.1</b>	<b>43</b>	<b>34</b>	<b>Yes</b>	<b>11</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.01</b>	<b>NP</b>
Total Dissolved Solids [TDS] (mg/L)	MCM-11 (bg)	-71.1	-27	-30	No	10	0	n/a	n/a	0.01	NP
<b>Total Dissolved Solids [TDS] (mg/L)</b>	<b>MCM-14</b>	<b>5116</b>	<b>53</b>	<b>34</b>	<b>Yes</b>	<b>11</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.01</b>	<b>NP</b>
Total Dissolved Solids [TDS] (mg/L)	MCM-15 (bg)	38.32	27	30	No	10	0	n/a	n/a	0.01	NP
<b>Total Dissolved Solids [TDS] (mg/L)</b>	<b>MCM-17</b>	<b>1346</b>	<b>41</b>	<b>34</b>	<b>Yes</b>	<b>11</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.01</b>	<b>NP</b>

### Sen's Slope Estimator

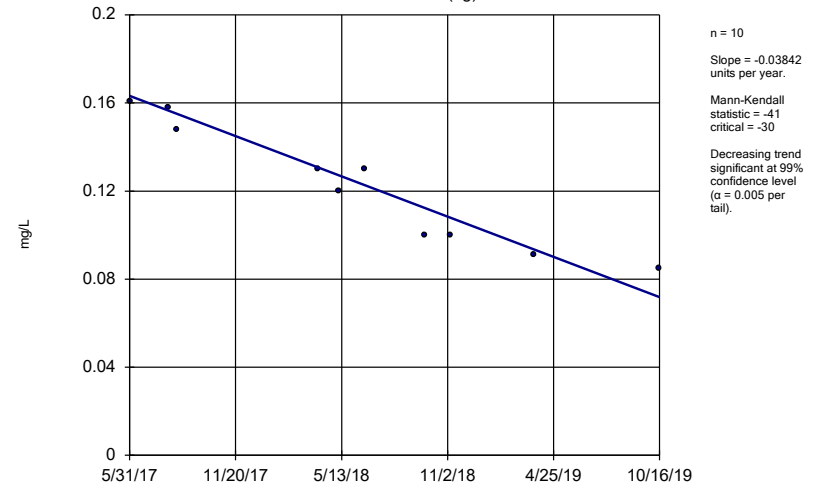
MCM-01 (bg)



Constituent: Boron Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator

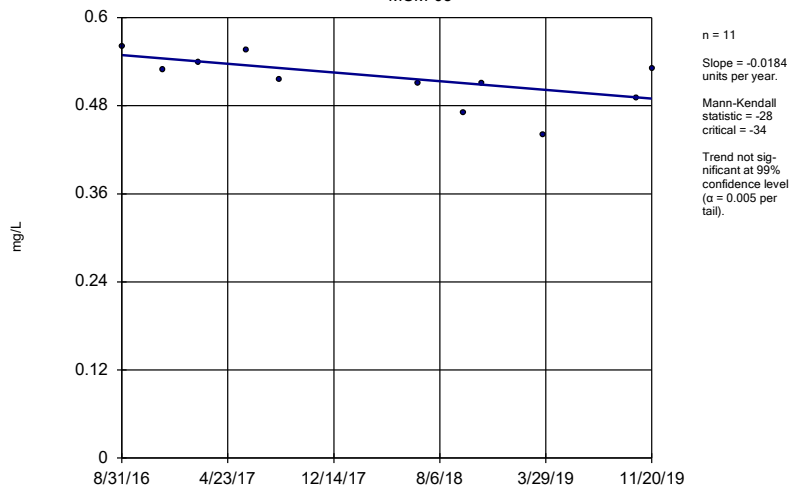
MCM-02 (bg)



Constituent: Boron Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator

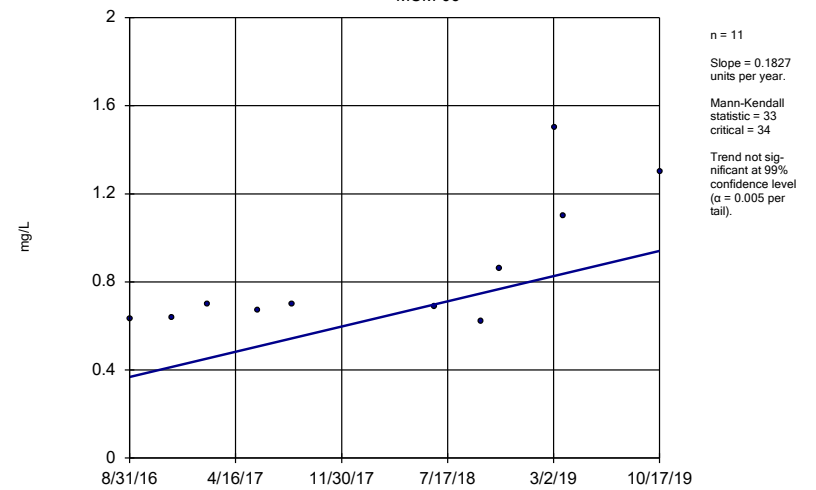
MCM-05



Constituent: Boron Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

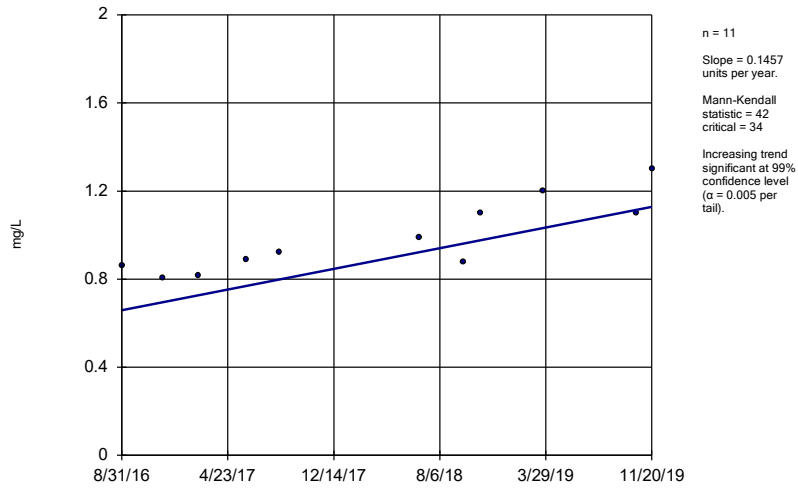
### Sen's Slope Estimator

MCM-06



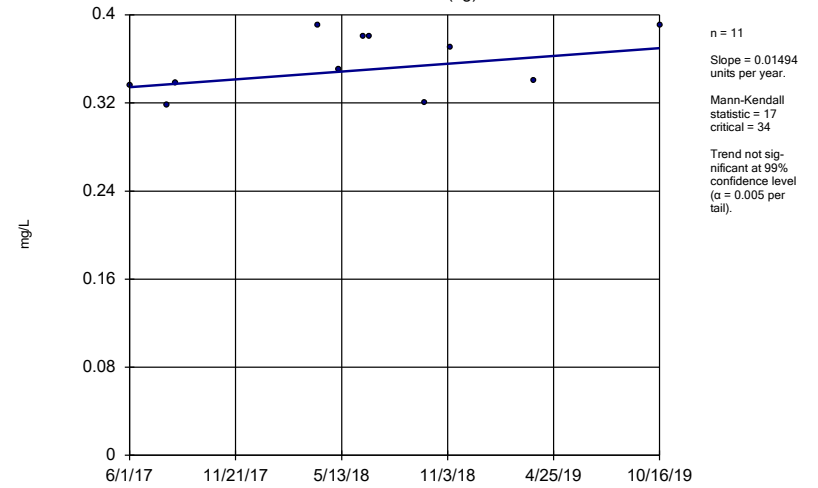
Constituent: Boron Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

Sen's Slope Estimator  
MCM-07



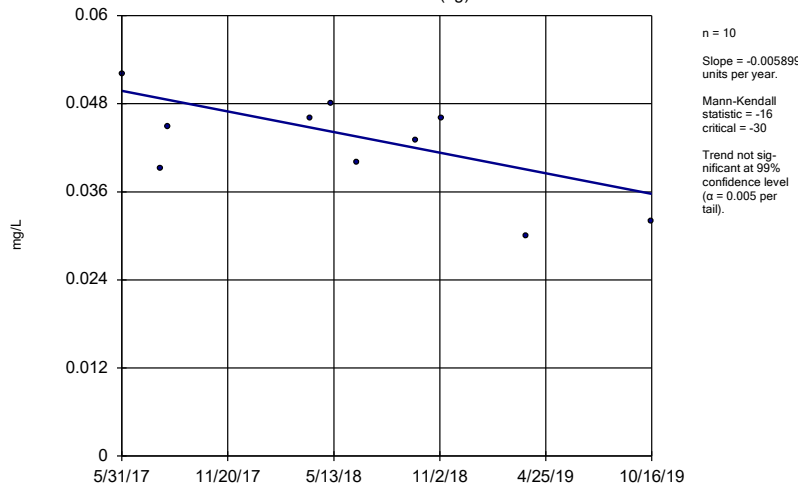
Constituent: Boron Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

Sen's Slope Estimator  
MCM-08 (bg)



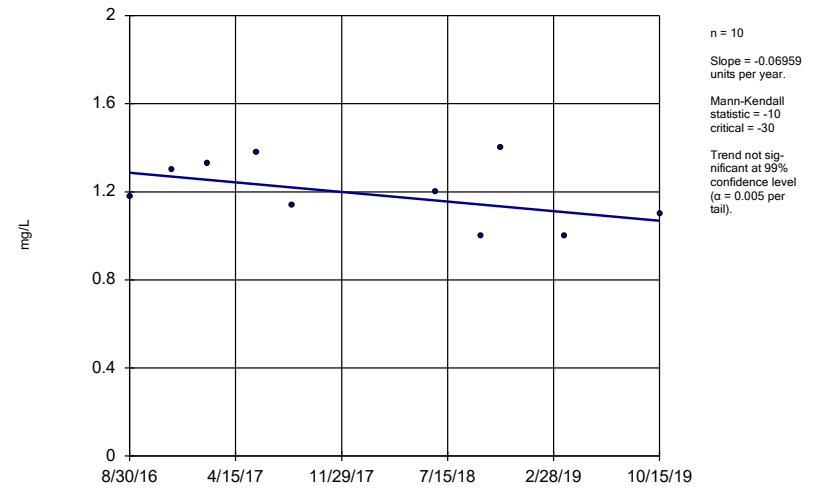
Constituent: Boron Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

Sen's Slope Estimator  
MCM-11 (bg)



Constituent: Boron Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

Sen's Slope Estimator  
MCM-12

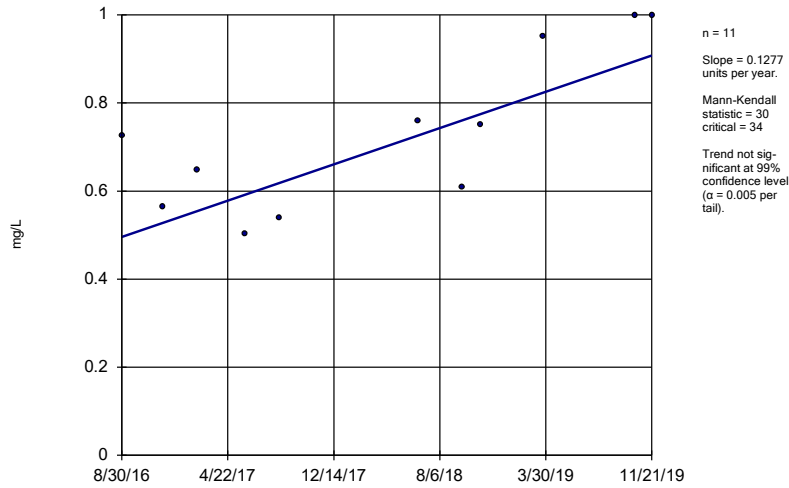


Constituent: Boron Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond



### Sen's Slope Estimator

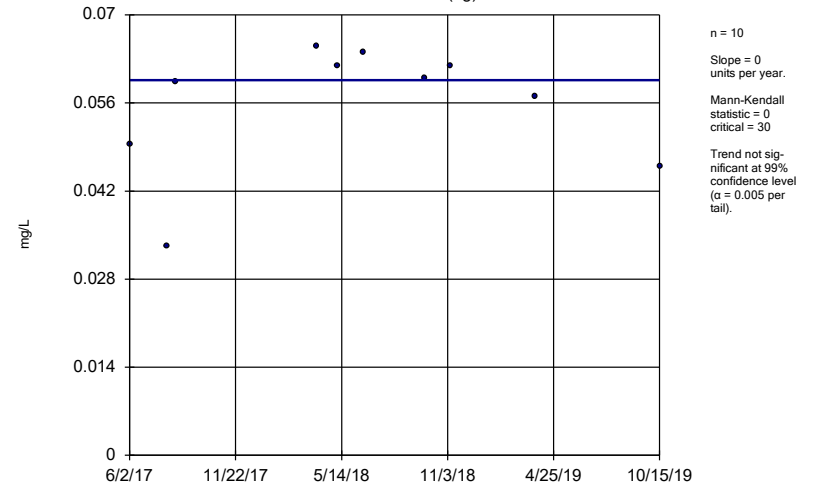
MCM-14



Constituent: Boron Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator

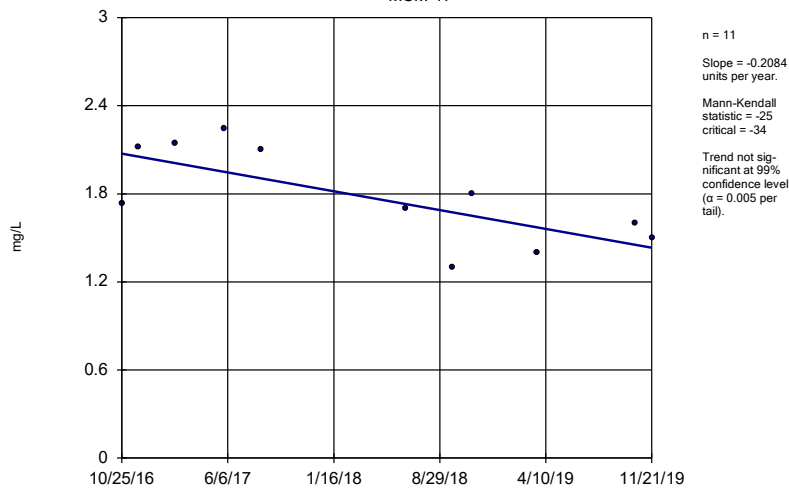
MCM-15 (bg)



Constituent: Boron Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator

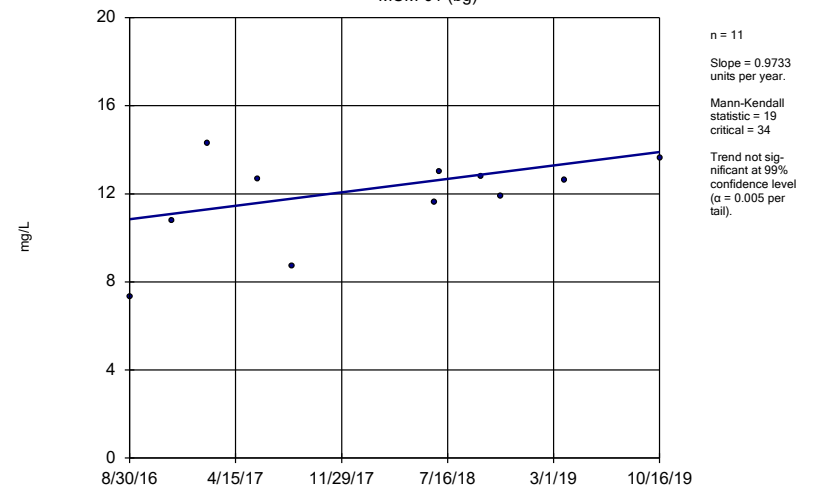
MCM-17



Constituent: Boron Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator

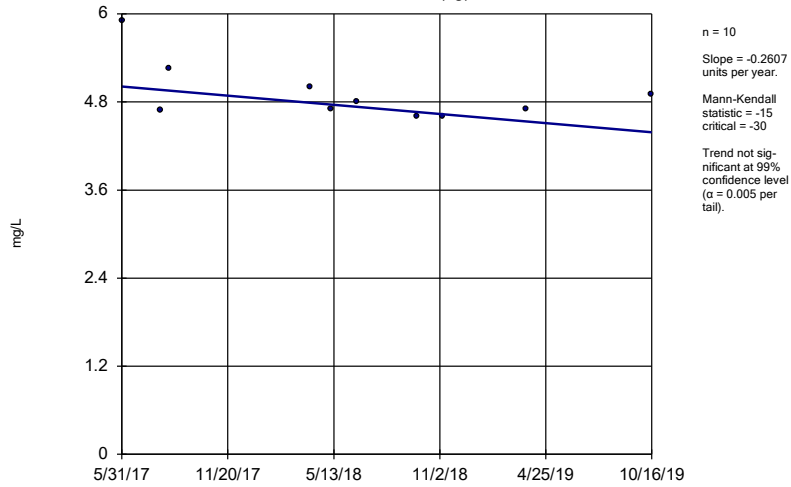
MCM-01 (bg)



Constituent: Calcium Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator

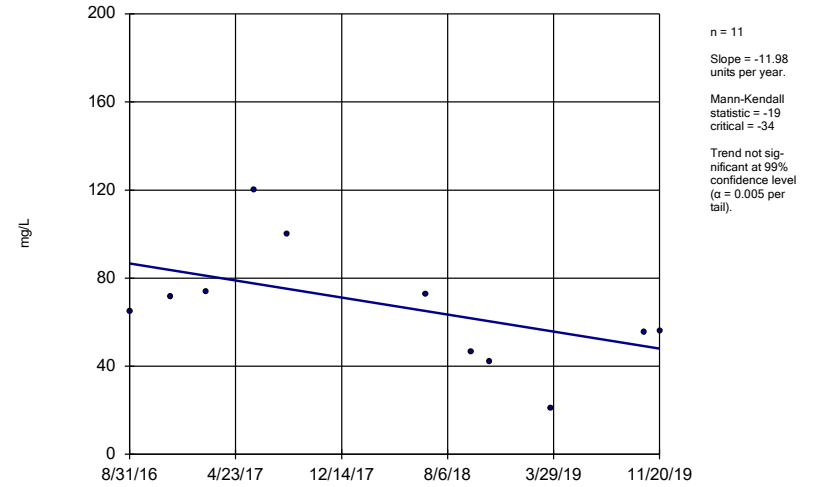
MCM-02 (bg)



Constituent: Calcium Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator

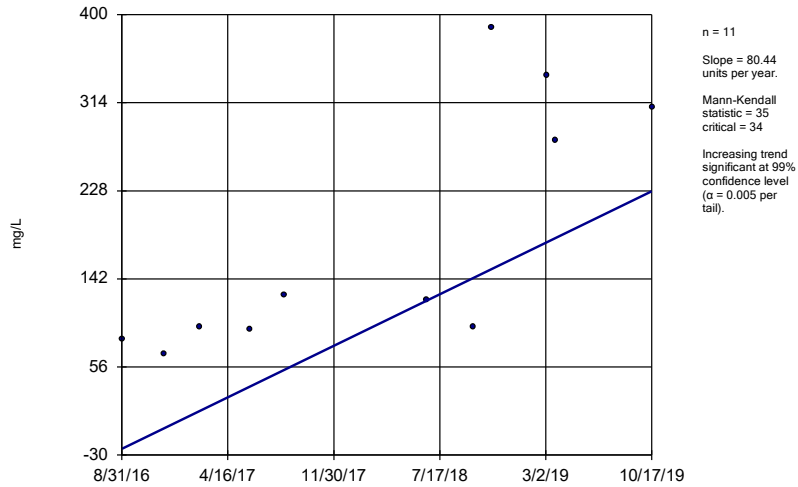
MCM-05



Constituent: Calcium Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator

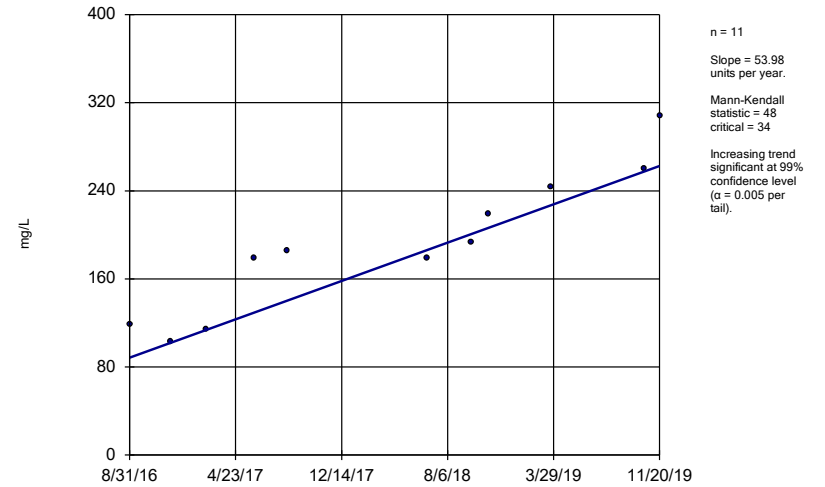
MCM-06



Constituent: Calcium Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator

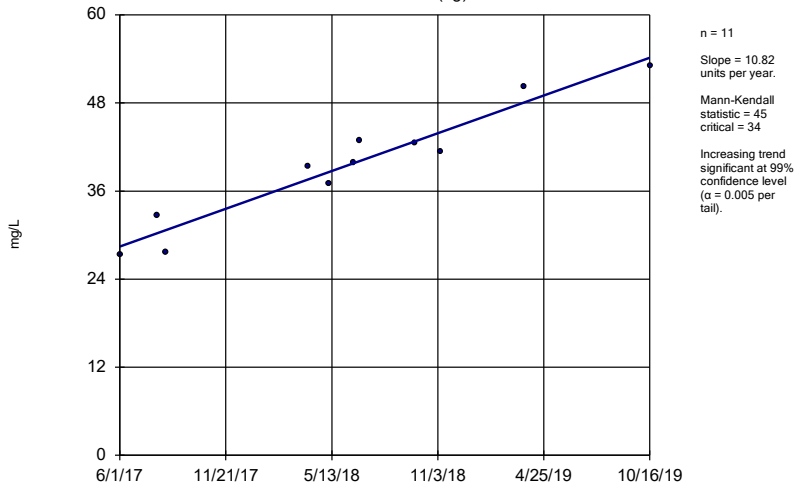
MCM-07



Constituent: Calcium Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator

MCM-08 (bg)

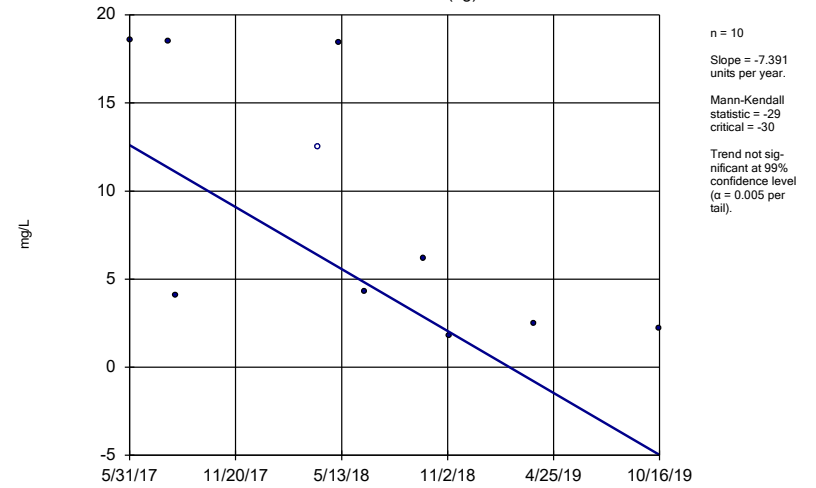


Constituent: Calcium Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

Hollow symbols indicate censored values.

### Sen's Slope Estimator

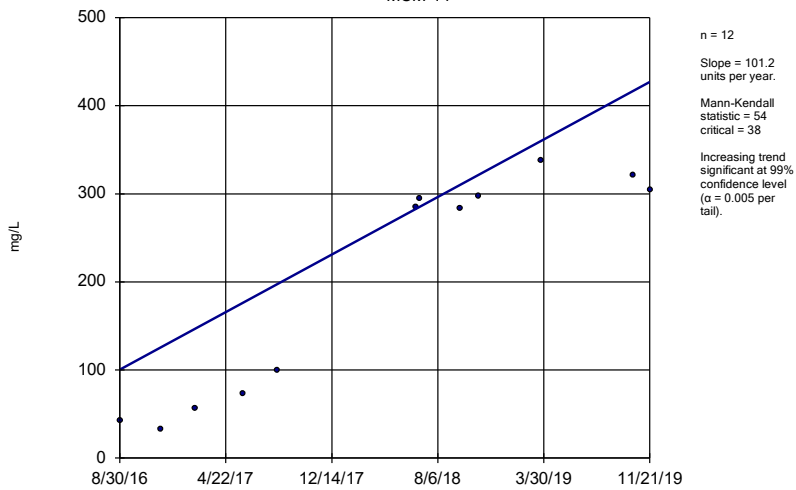
MCM-11 (bg)



Constituent: Calcium Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator

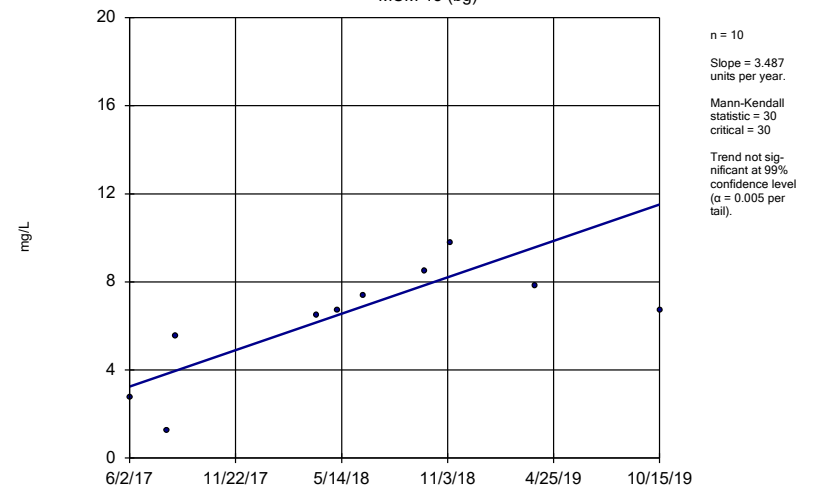
MCM-14



Constituent: Calcium Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

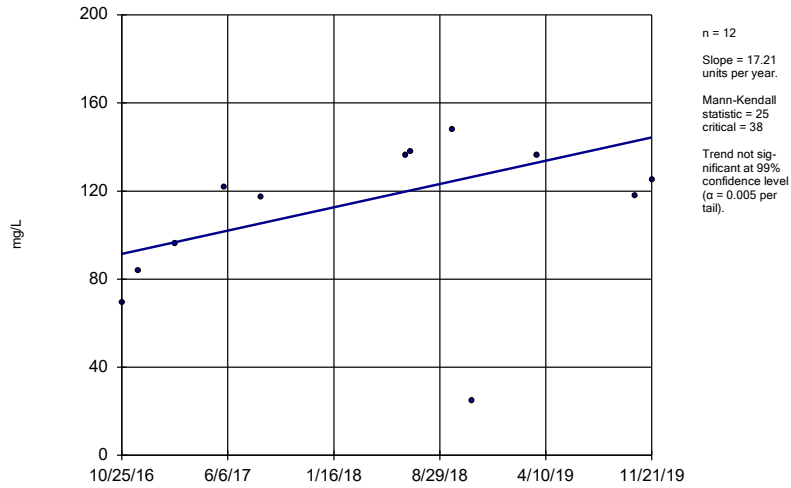
### Sen's Slope Estimator

MCM-15 (bg)



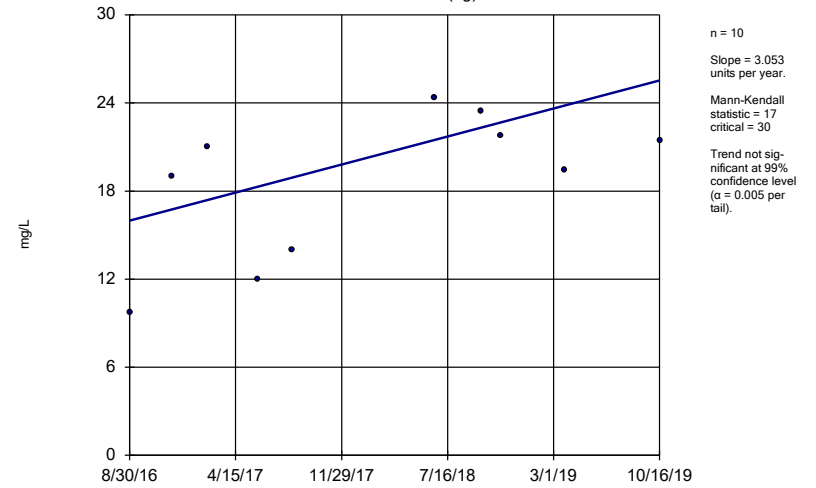
Constituent: Calcium Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator MCM-17



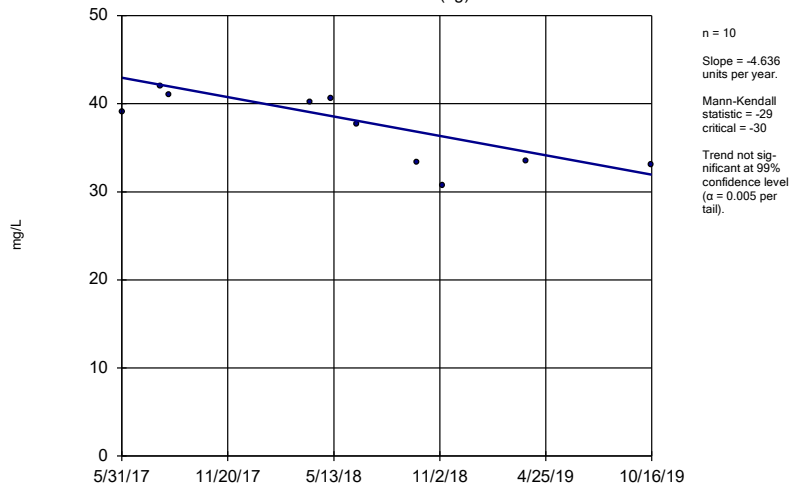
Constituent: Calcium Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator MCM-01 (bg)



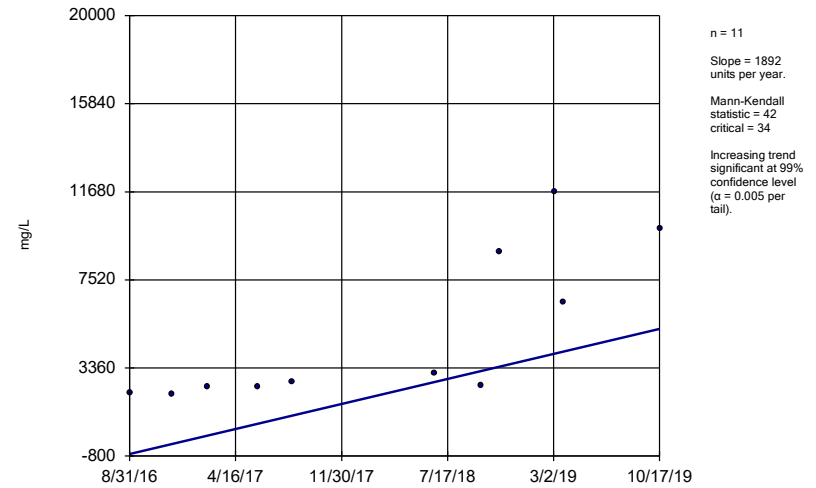
Constituent: Chloride Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator MCM-02 (bg)



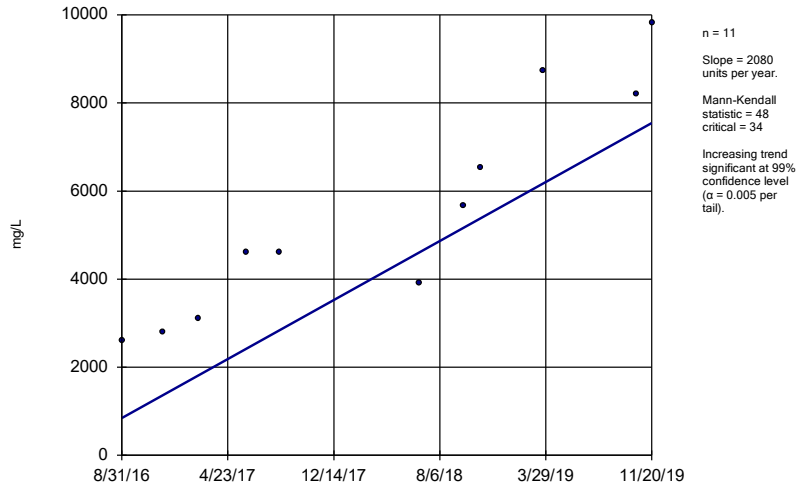
Constituent: Chloride Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator MCM-06



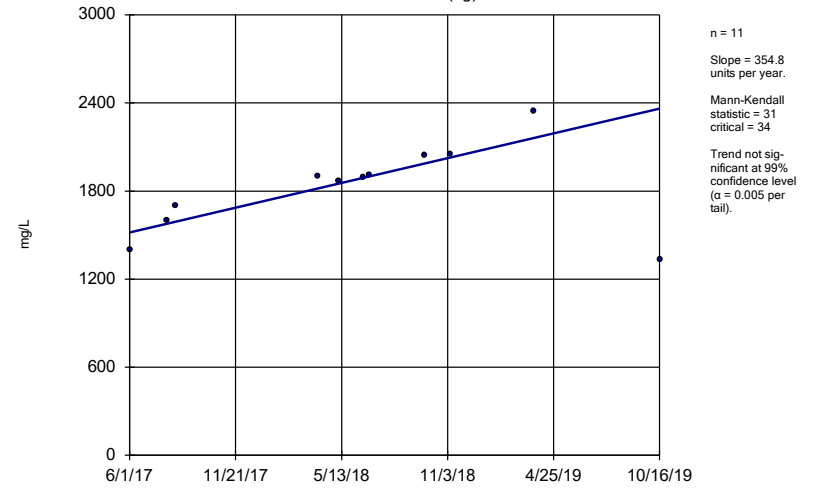
Constituent: Chloride Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

Sen's Slope Estimator  
MCM-07



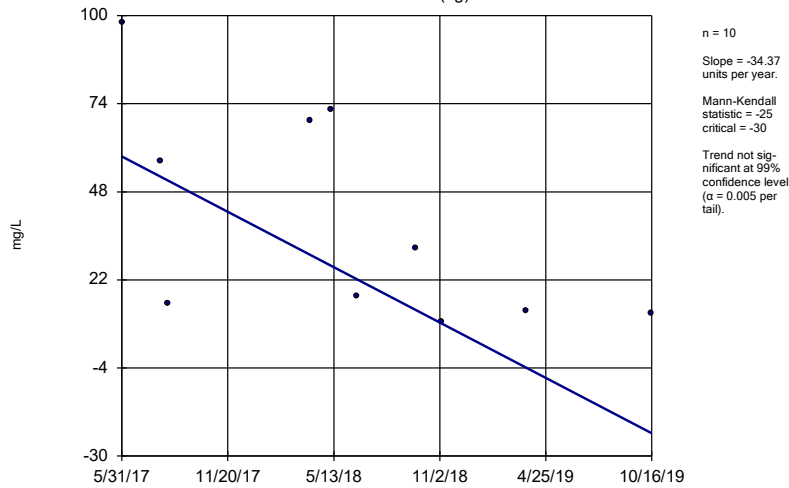
Constituent: Chloride Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

Sen's Slope Estimator  
MCM-08 (bg)



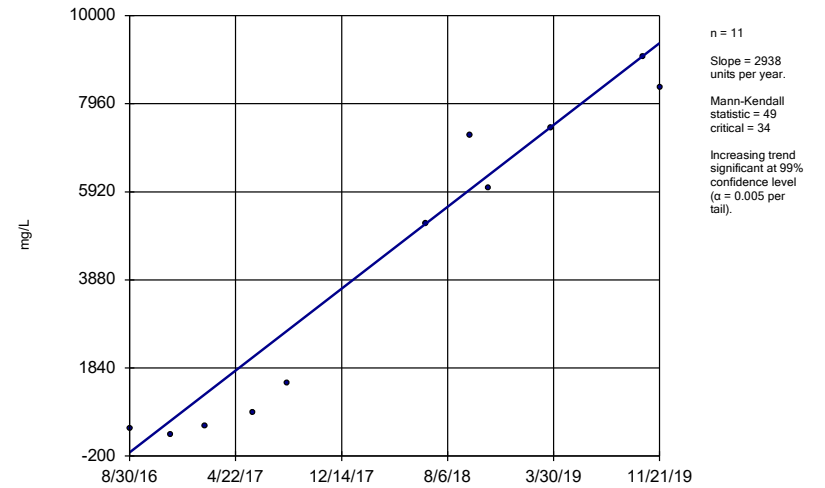
Constituent: Chloride Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

Sen's Slope Estimator  
MCM-11 (bg)



Constituent: Chloride Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

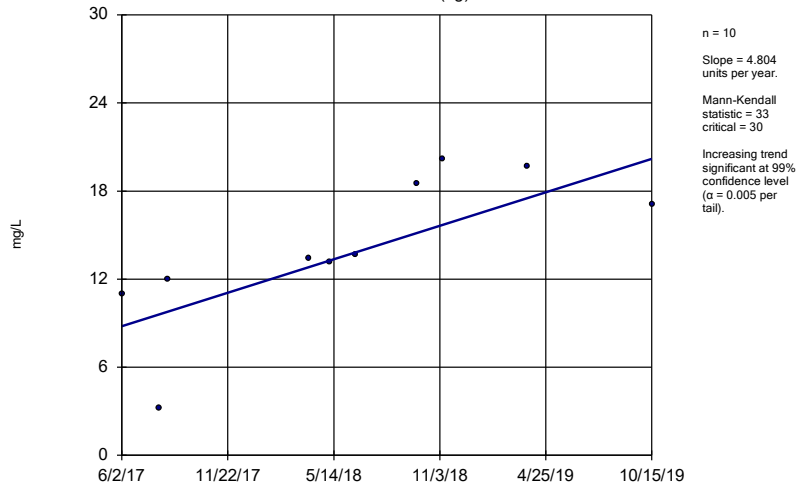
Sen's Slope Estimator  
MCM-14



Constituent: Chloride Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator

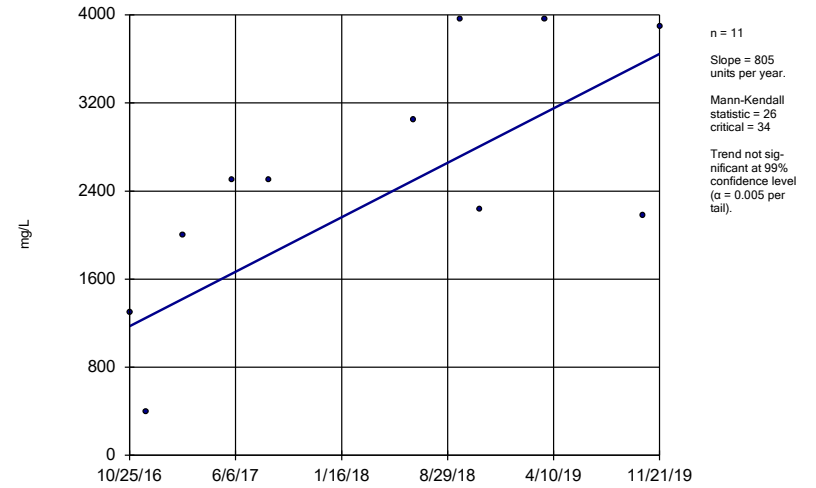
MCM-15 (bg)



Constituent: Chloride Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator

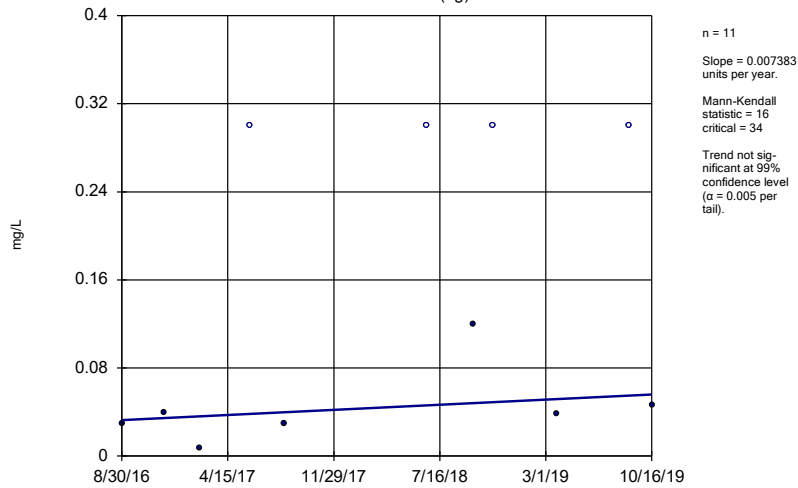
MCM-17



Constituent: Chloride Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator

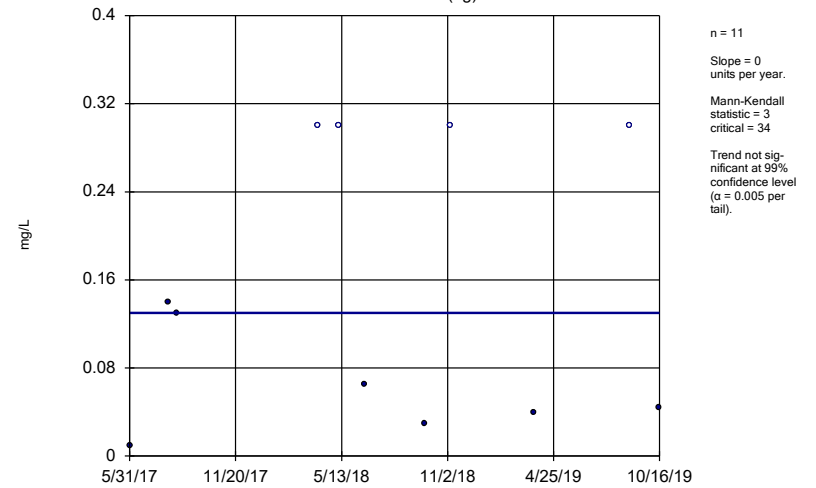
MCM-01 (bg)



Constituent: Fluoride Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

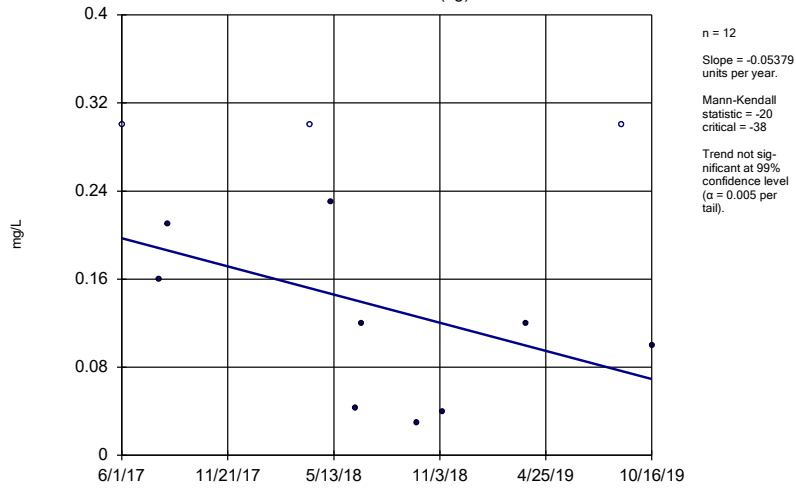
### Sen's Slope Estimator

MCM-02 (bg)



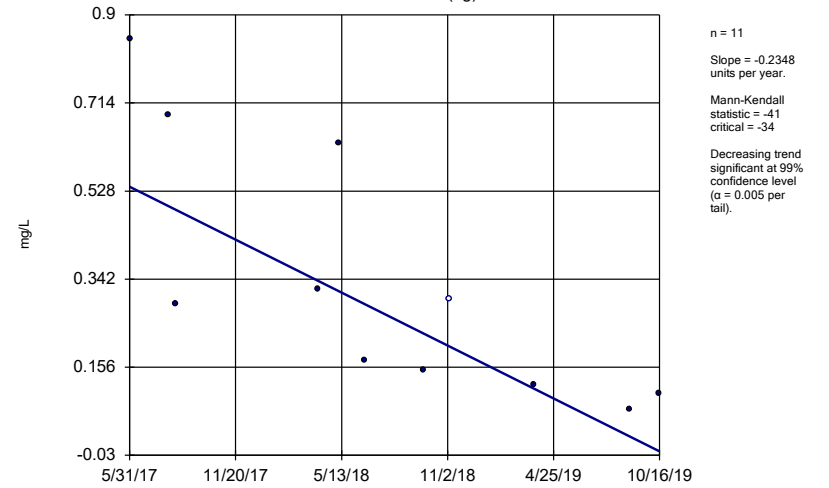
Constituent: Fluoride Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

Sen's Slope Estimator  
MCM-08 (bg)



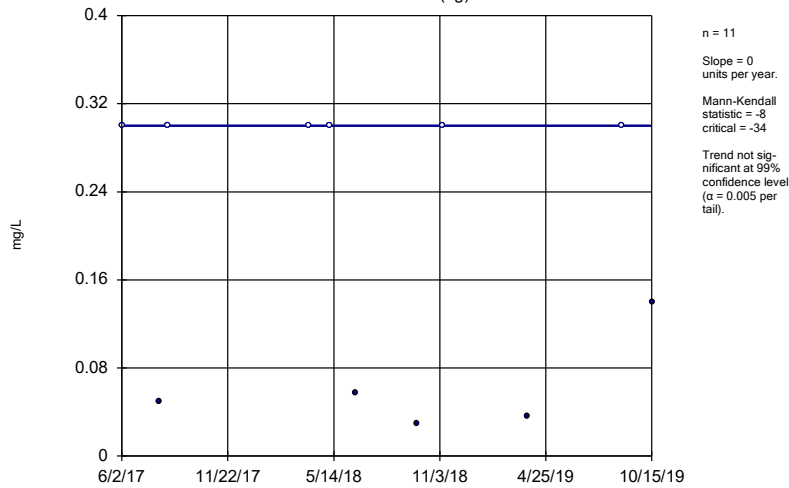
Constituent: Fluoride Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

Sen's Slope Estimator  
MCM-11 (bg)



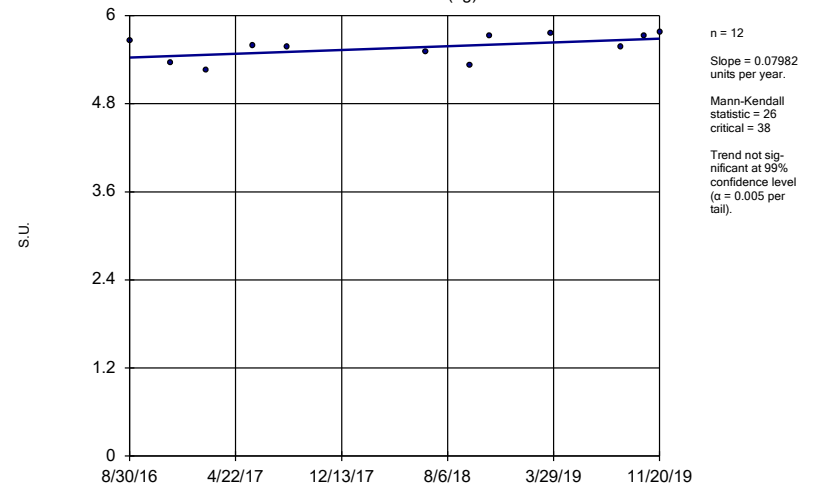
Constituent: Fluoride Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

Sen's Slope Estimator  
MCM-15 (bg)



Constituent: Fluoride Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

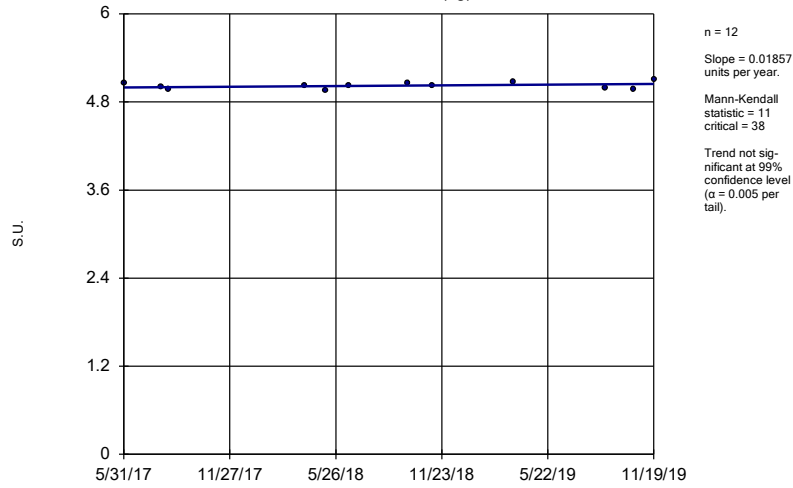
Sen's Slope Estimator  
MCM-01 (bg)



Constituent: pH Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator

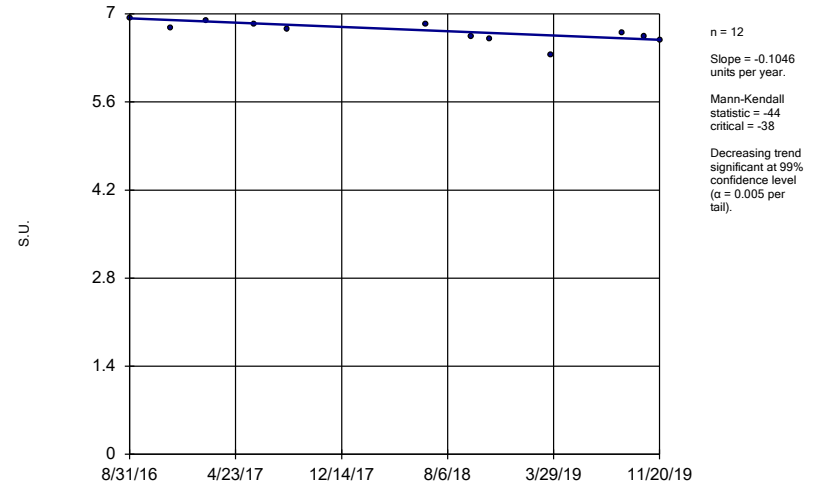
MCM-02 (bg)



Constituent: pH Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator

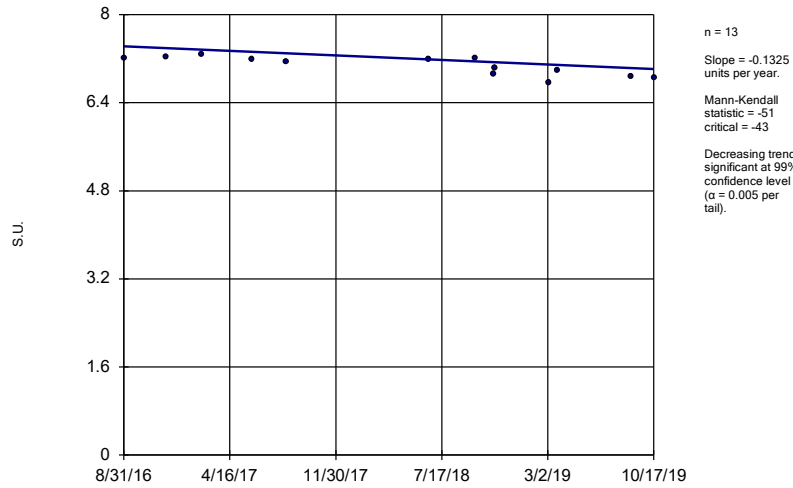
MCM-05



Constituent: pH Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator

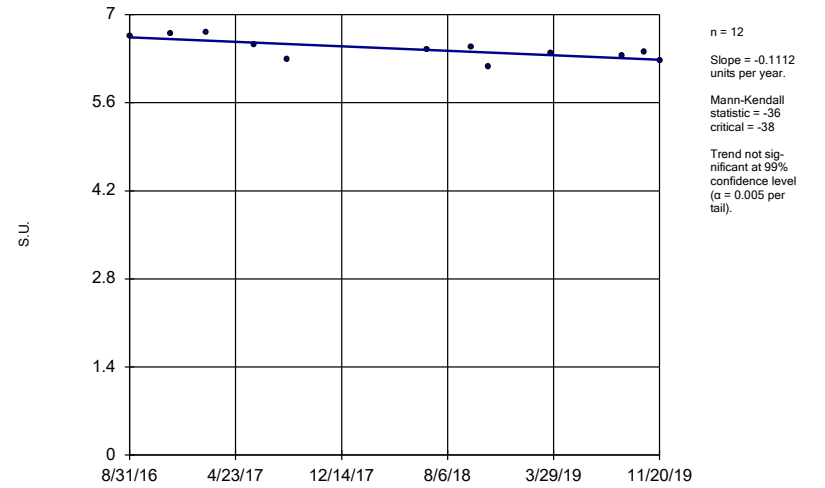
MCM-06



Constituent: pH Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator

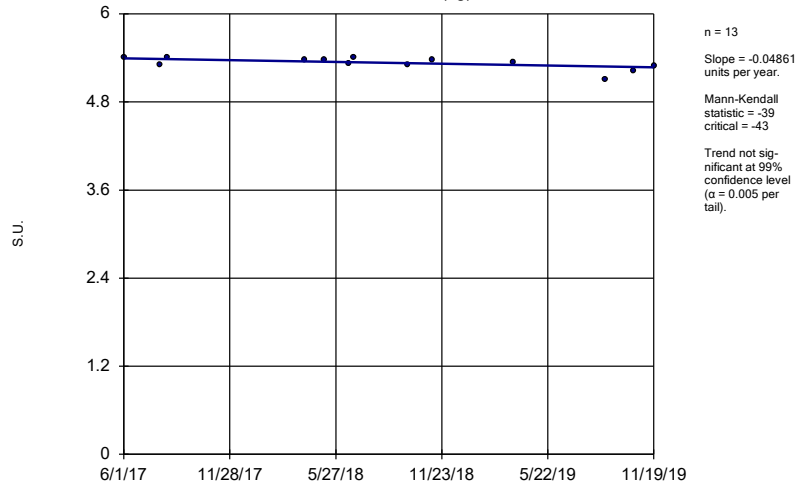
MCM-07



Constituent: pH Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

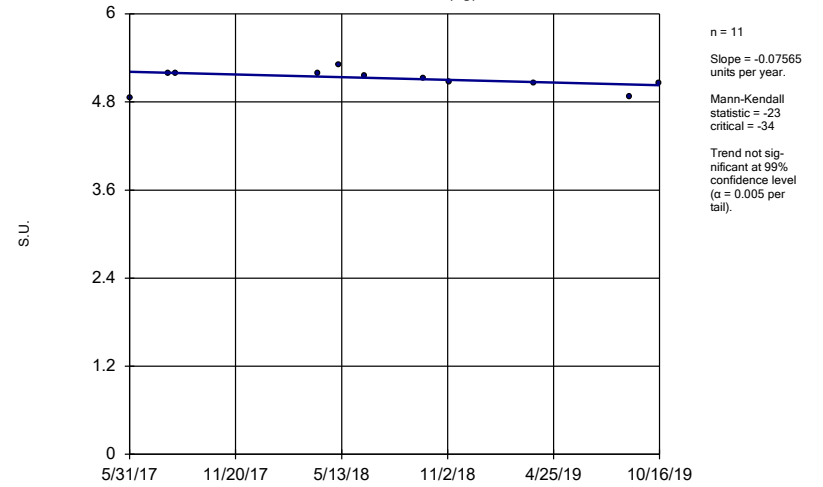


### Sen's Slope Estimator MCM-08 (bg)



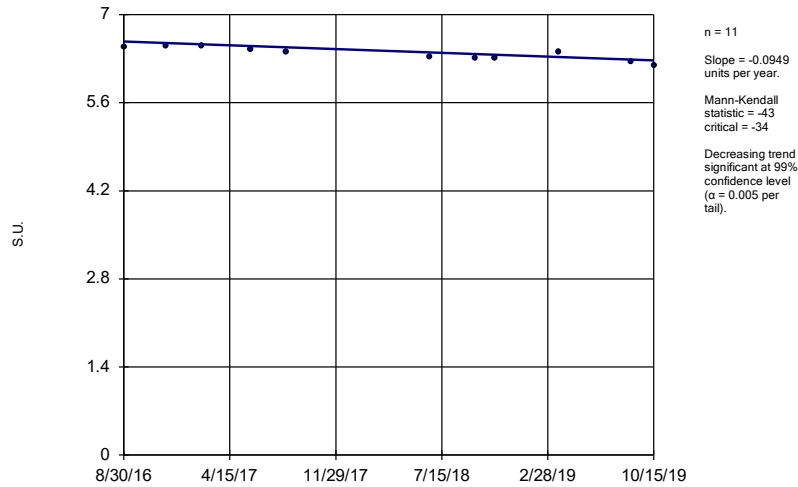
Constituent: pH Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator MCM-11 (bg)



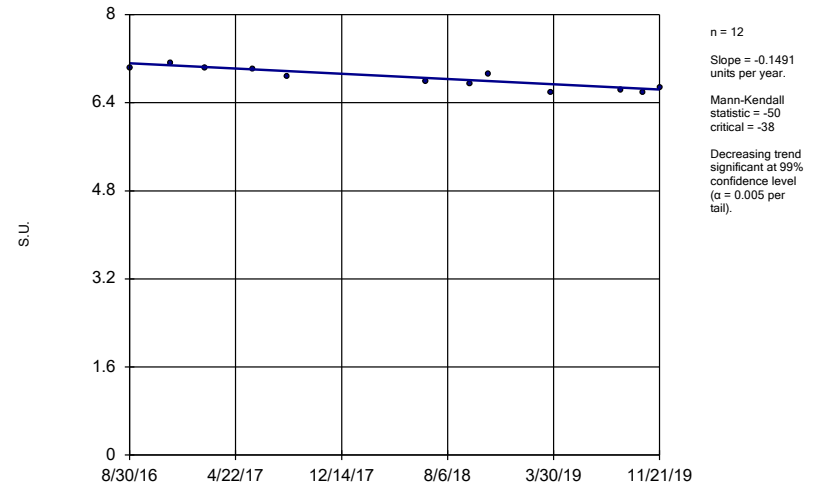
Constituent: pH Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator MCM-12



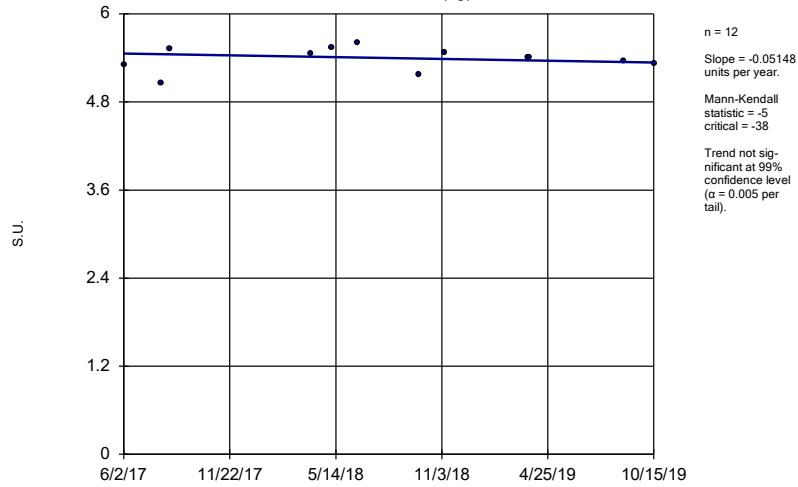
Constituent: pH Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator MCM-14



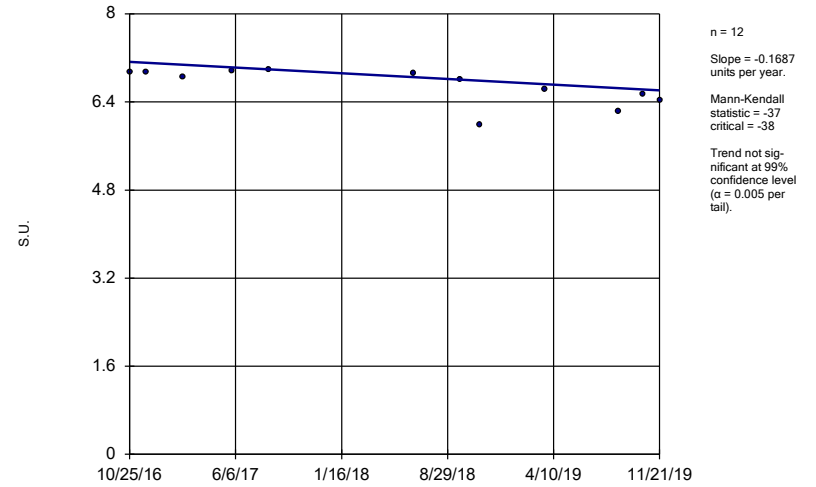
Constituent: pH Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

Sen's Slope Estimator  
MCM-15 (bg)



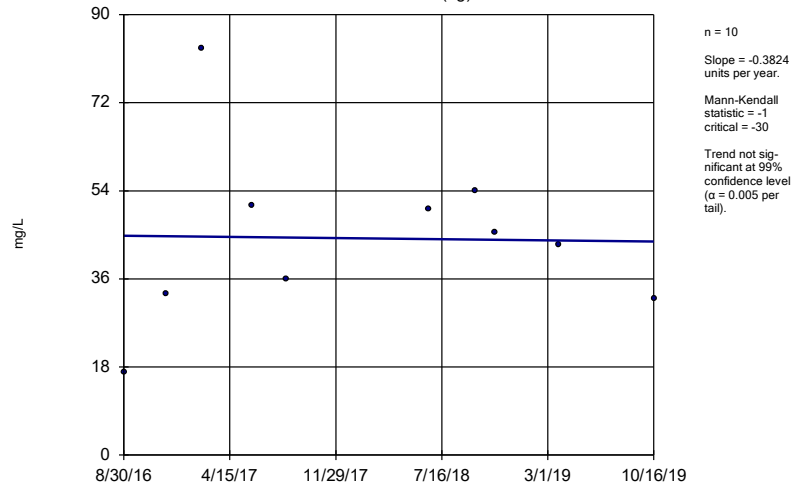
Constituent: pH Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

Sen's Slope Estimator  
MCM-17



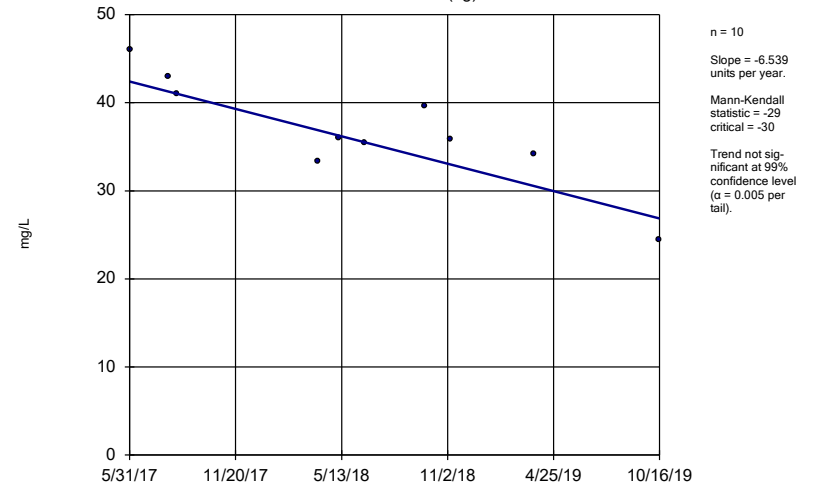
Constituent: pH Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

Sen's Slope Estimator  
MCM-01 (bg)



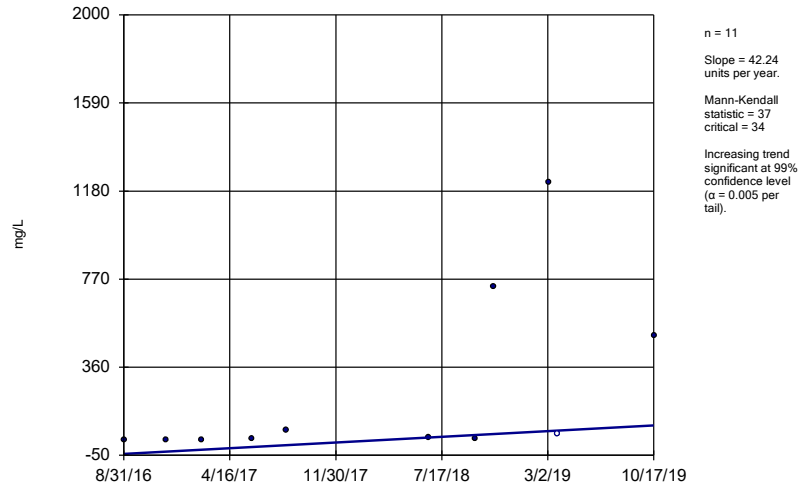
Constituent: Sulfate Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

Sen's Slope Estimator  
MCM-02 (bg)

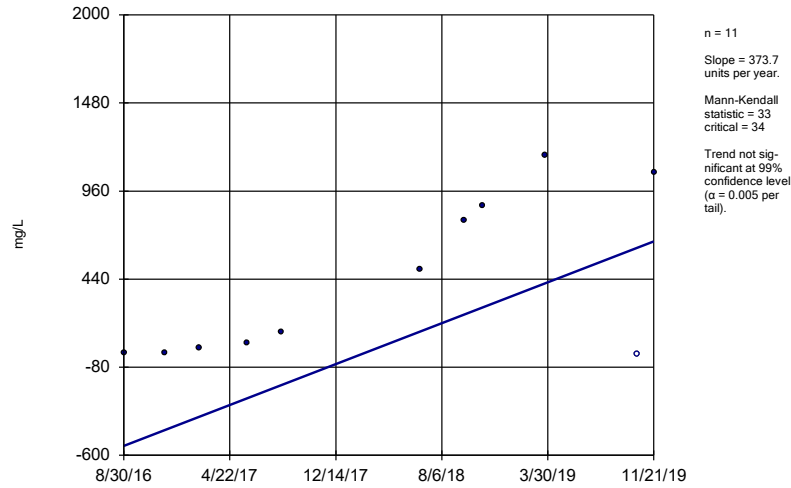


Constituent: Sulfate Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

Sen's Slope Estimator  
 MCM-06

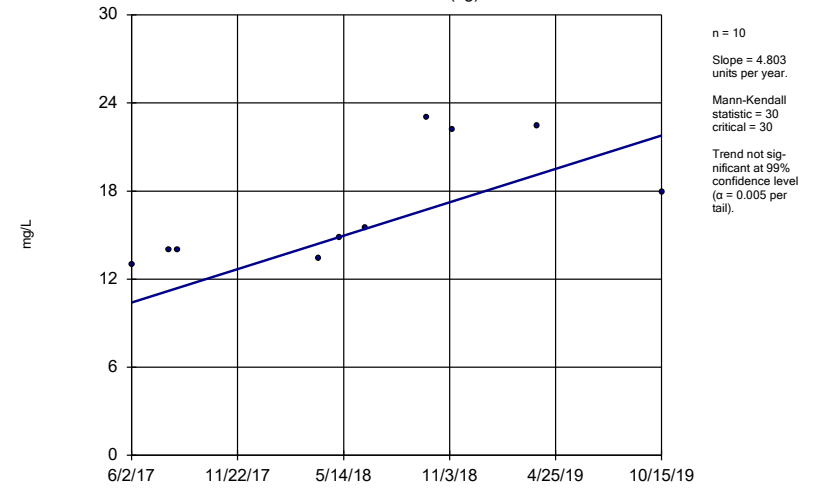


Sen's Slope Estimator  
 MCM-14



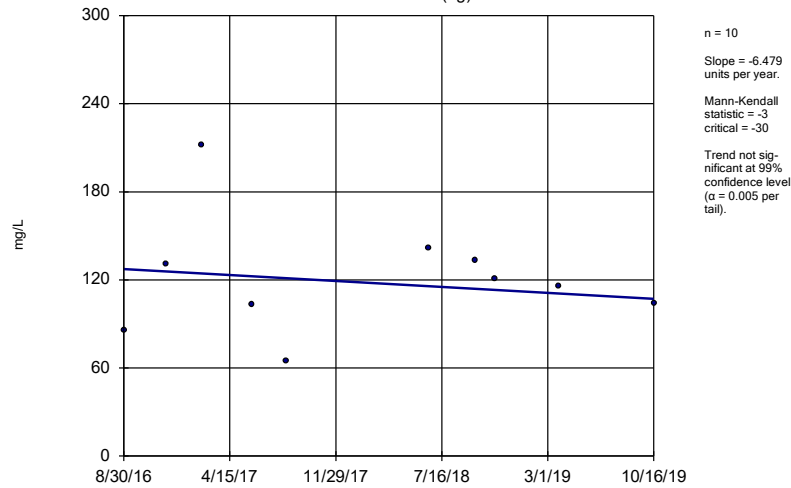
Constituent: Sulfate Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

Sen's Slope Estimator  
 MCM-15 (bg)



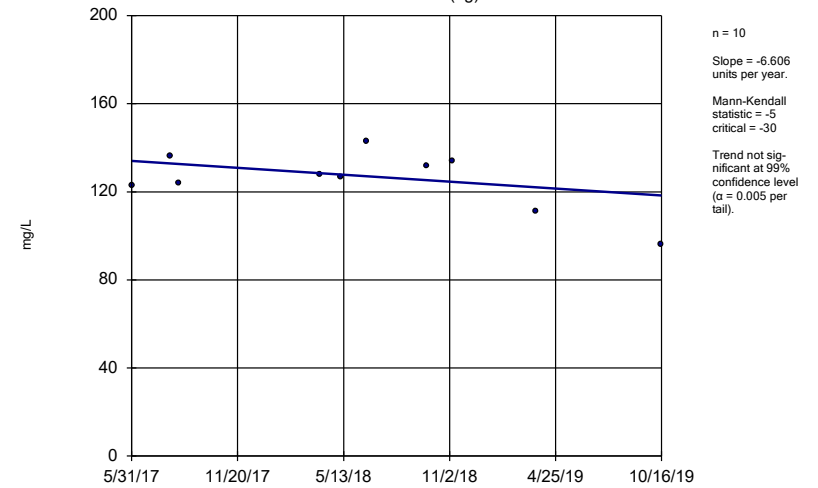
Constituent: Sulfate Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

Sen's Slope Estimator  
 MCM-01 (bg)



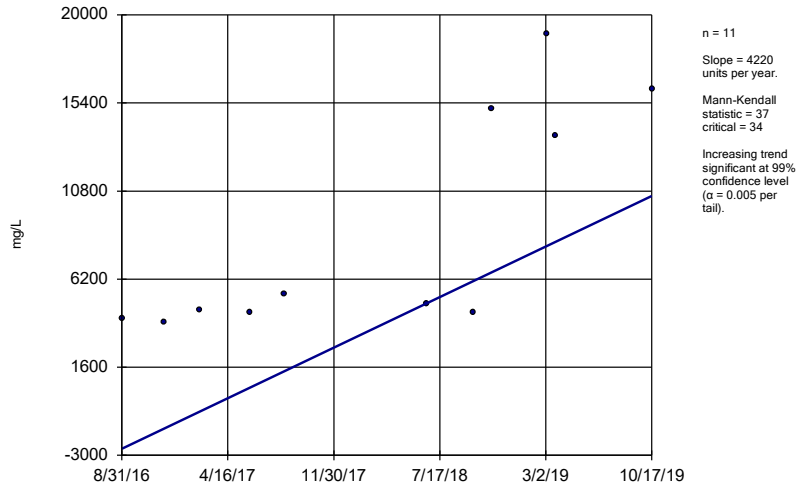
Constituent: Total Dissolved Solids [TDS] Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

Sen's Slope Estimator  
 MCM-02 (bg)



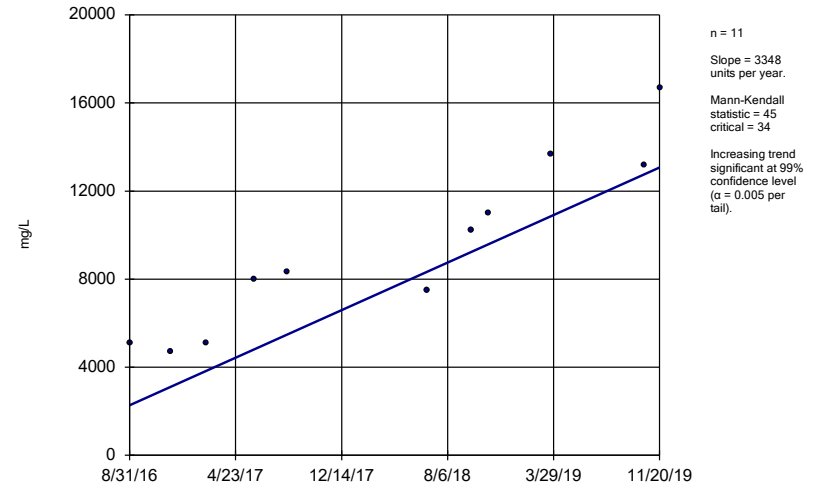
Constituent: Total Dissolved Solids [TDS] Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

Sen's Slope Estimator  
MCM-06



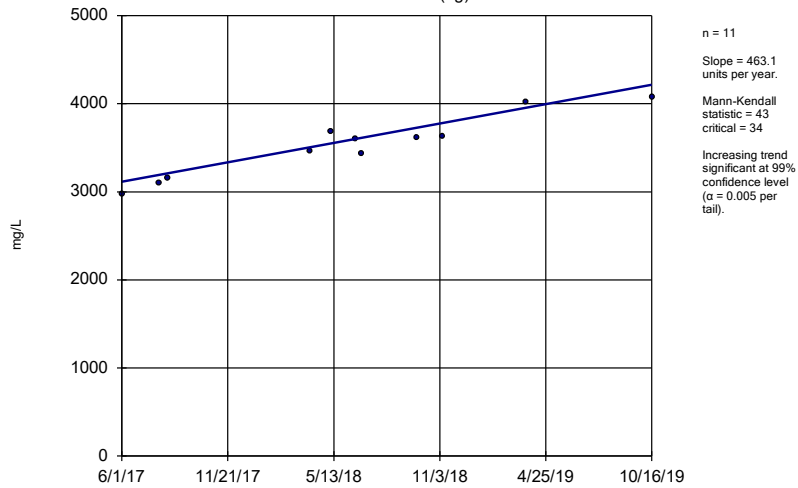
Constituent: Total Dissolved Solids [TDS] Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

Sen's Slope Estimator  
MCM-07



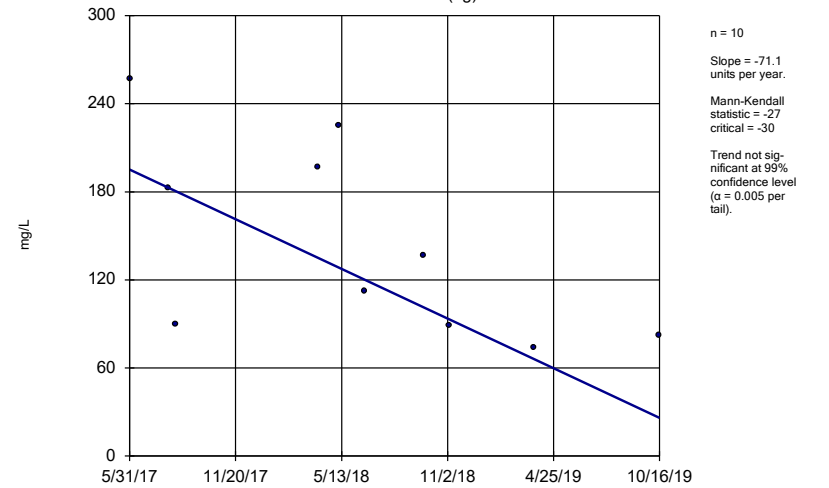
Constituent: Total Dissolved Solids [TDS] Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

Sen's Slope Estimator  
MCM-08 (bg)



Constituent: Total Dissolved Solids [TDS] Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

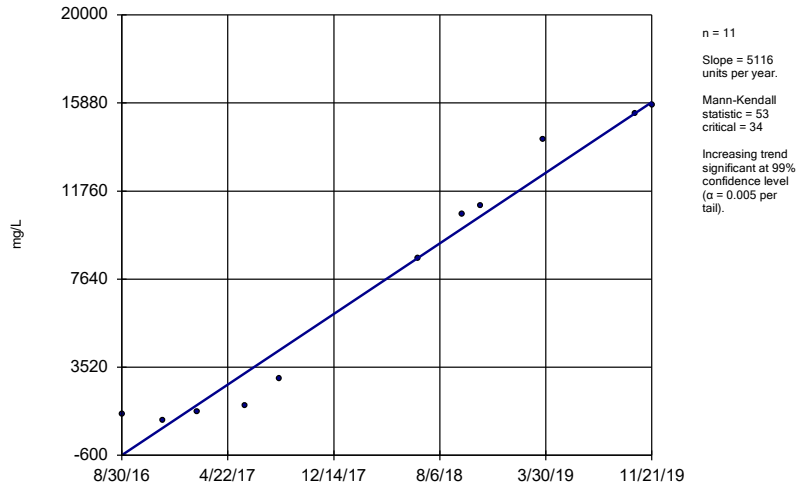
Sen's Slope Estimator  
MCM-11 (bg)



Constituent: Total Dissolved Solids [TDS] Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator

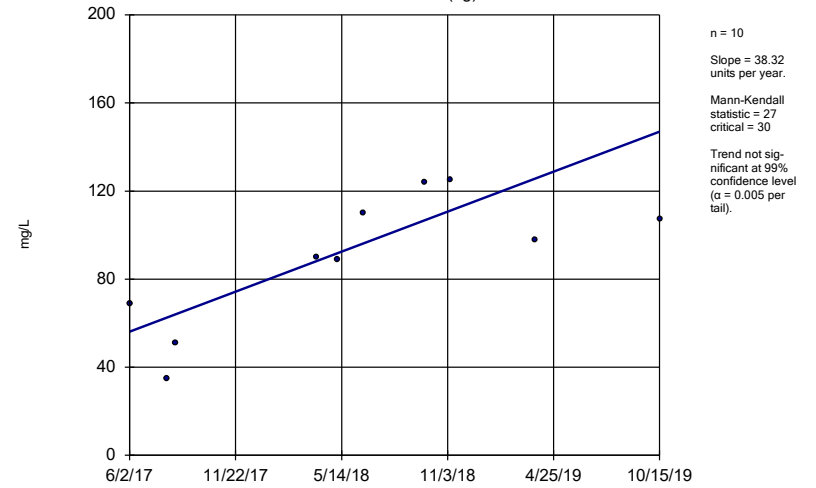
MCM-14



Constituent: Total Dissolved Solids [TDS] Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator

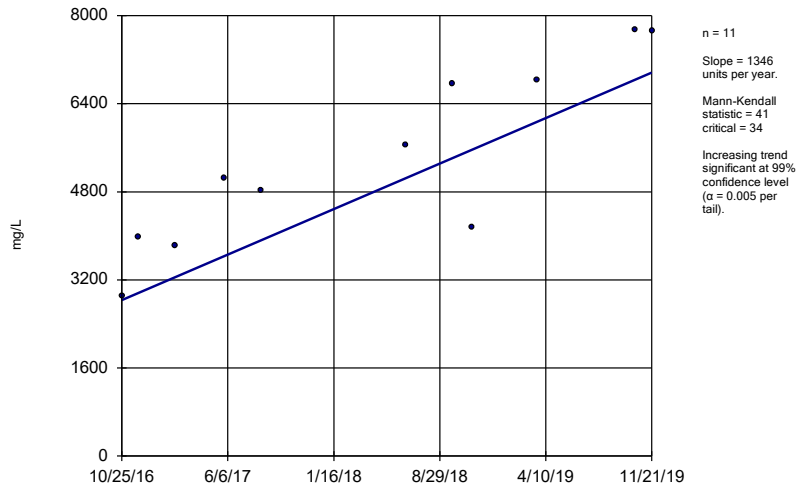
MCM-15 (bg)



Constituent: Total Dissolved Solids [TDS] Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

### Sen's Slope Estimator

MCM-17

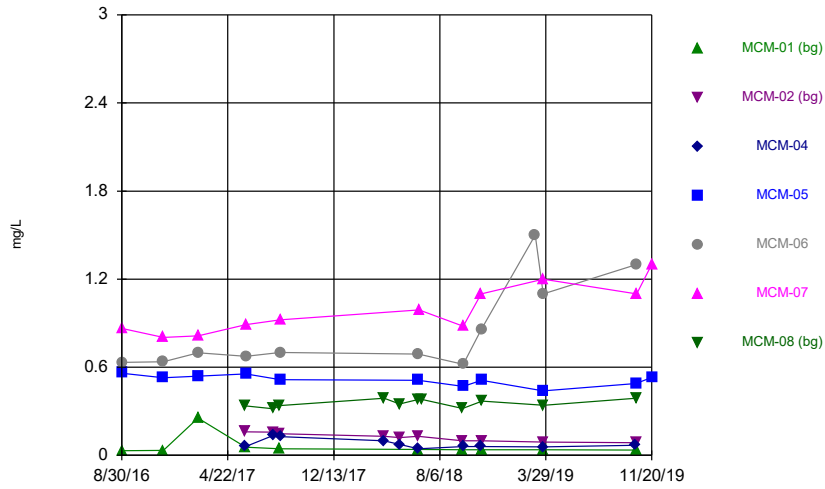


Constituent: Total Dissolved Solids [TDS] Analysis Run 1/16/2020 1:58 PM View: Trend Tests  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

# Time Series

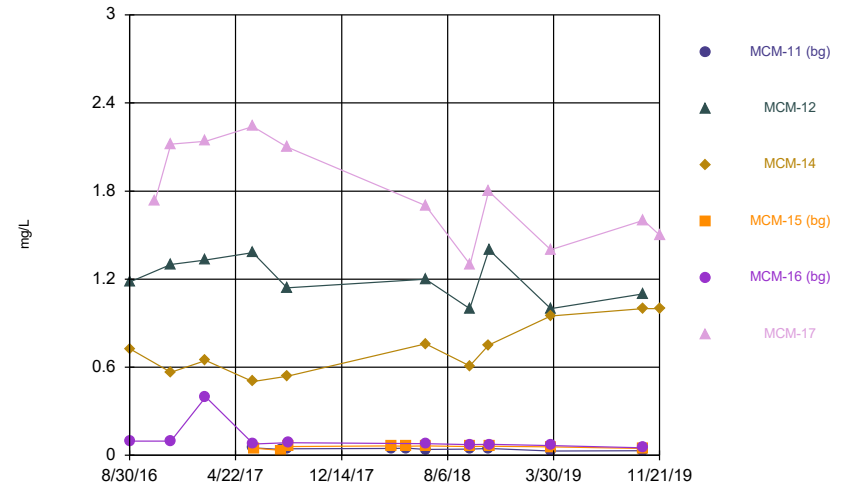
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Time Series



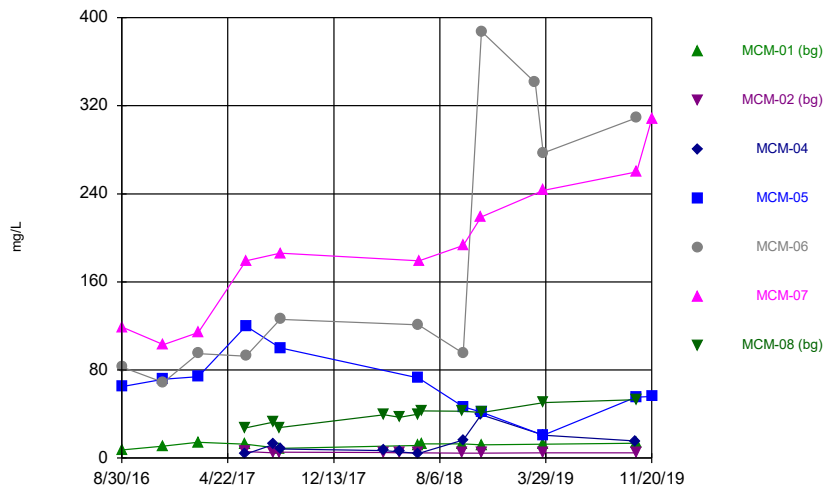
Constituent: Boron Analysis Run 1/16/2020 1:14 PM  
Plant McManus Client: Southern Company Data: McManus Ash Pond

Time Series



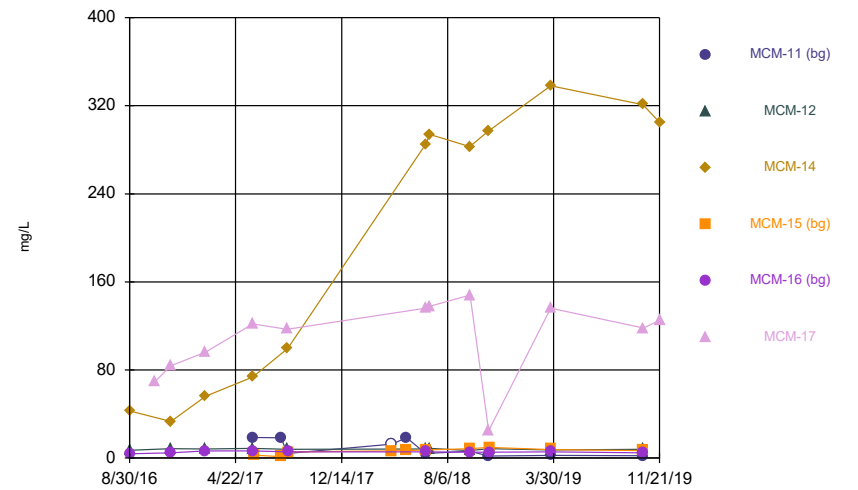
Constituent: Boron Analysis Run 1/16/2020 1:14 PM  
Plant McManus Client: Southern Company Data: McManus Ash Pond

Time Series



Constituent: Calcium Analysis Run 1/16/2020 1:14 PM  
Plant McManus Client: Southern Company Data: McManus Ash Pond

Time Series



Constituent: Calcium Analysis Run 1/16/2020 1:14 PM  
Plant McManus Client: Southern Company Data: McManus Ash Pond



# Time Series

Constituent: Boron (mg/L) Analysis Run 1/16/2020 1:15 PM

Plant McManus Client: Southern Company Data: McManus Ash Pond

	MCM-01 (bg)	MCM-02 (bg)	MCM-04	MCM-05	MCM-06	MCM-07	MCM-08 (bg)
8/30/2016	0.0325 (J)						
8/31/2016				0.56	0.632	0.863	
11/30/2016	0.0334 (J)			0.529	0.637	0.804	
2/15/2017	0.254						
2/16/2017				0.539	0.698	0.815	
5/31/2017		0.161					
6/1/2017	0.0564		0.0608				0.336
6/2/2017				0.555	0.674	0.891	
8/2/2017		0.158	0.137				0.318
8/15/2017							0.338
8/16/2017	0.0435	0.148					
8/17/2017			0.128	0.516	0.7	0.922	
4/4/2018			0.1				
4/5/2018		0.13					0.39
5/8/2018			0.074				
5/9/2018		0.12					0.35
6/19/2018	0.04 (J)	0.13					0.38
6/20/2018			0.045	0.51	0.69		
6/21/2018						0.99	
6/28/2018							0.38
9/26/2018	0.038 (J)	0.1					0.32
9/27/2018			0.06	0.47	0.62	0.88	
11/6/2018			0.06			1.1	
11/7/2018	0.037 (J)	0.1		0.51	0.86		
11/8/2018							0.37
3/6/2019					1.5		
3/24/2019				0.44	1.1	1.2	
3/25/2019	0.038 (J)	0.091	0.058				0.34
10/15/2019			0.068				
10/16/2019	0.036 (J)	0.085		0.49			0.39
10/17/2019					1.3	1.1	
11/20/2019				0.53		1.3	

# Time Series

Constituent: Boron (mg/L) Analysis Run 1/16/2020 1:15 PM

Plant McManus Client: Southern Company Data: McManus Ash Pond

	MCM-11 (bg)	MCM-12	MCM-14	MCM-15 (bg)	MCM-16 (bg)	MCM-17
8/30/2016		1.18	0.726		0.0972 (J)	
10/25/2016						1.73
11/30/2016		1.3	0.565		0.0964	2.12
2/15/2017		1.33	0.647		0.398	2.14
5/31/2017	0.0521	1.38	0.503			2.24
6/1/2017					0.0776	
6/2/2017				0.0495		
8/2/2017	0.0392 (J)			0.0333 (J)		
8/15/2017	0.0448	1.14				2.1
8/16/2017			0.539			
8/17/2017				0.0593	0.0853	
4/4/2018	0.046			0.065		
5/8/2018	0.048			0.062		
6/19/2018	0.04	1.2	0.76	0.064		1.7
6/20/2018					0.079	
9/25/2018	0.043	1	0.61			
9/26/2018				0.06	0.072	1.3
11/6/2018	0.046		0.75			1.8
11/7/2018		1.4		0.062 (J)	0.074	
3/24/2019		1	0.95			1.4
3/25/2019	0.03 (J)			0.057	0.067	
10/15/2019		1.1	1	0.046		
10/16/2019	0.032 (J)				0.051	1.6
11/21/2019			1			1.5

# Time Series

Constituent: Calcium (mg/L) Analysis Run 1/16/2020 1:15 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

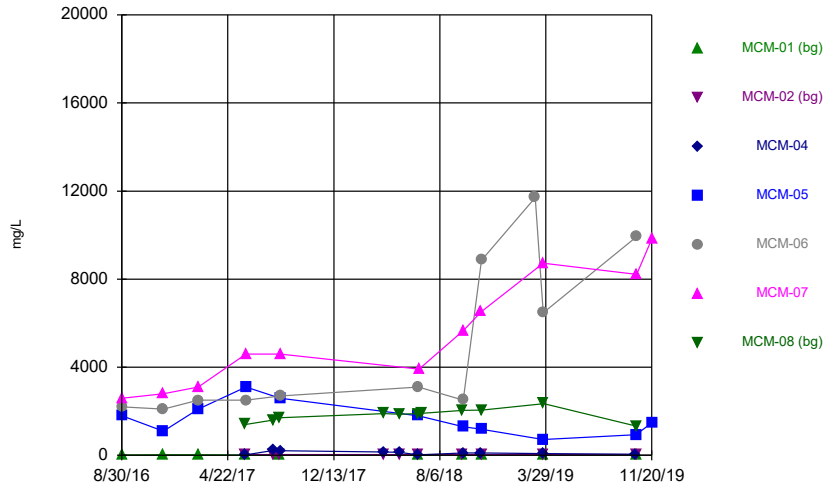
	MCM-01 (bg)	MCM-02 (bg)	MCM-04	MCM-05	MCM-06	MCM-07	MCM-08 (bg)
8/30/2016	7.3						
8/31/2016				65	82.8	119	
11/30/2016	10.8			71.7	68.7	103	
2/15/2017	14.3						
2/16/2017				74	94.8	114	
5/31/2017		5.9					
6/1/2017	12.7 (J)		3.65				27.3
6/2/2017				120	92.5	179	
8/2/2017		4.69	12.4				32.7
8/15/2017							27.7
8/16/2017	8.7	5.25					
8/17/2017			8.17	100	126	186	
4/4/2018			6.8				
4/5/2018		5					39.4
5/8/2018			5.7				
5/9/2018		4.7					37
6/19/2018	11.6 (J)	4.8					39.8
6/20/2018			4.3	72.8	121		
6/21/2018						179	
6/28/2018	13						42.9
9/26/2018	12.8 (J)	4.6					42.6
9/27/2018			16.4 (J)	46.6	95.1	193	
11/6/2018			39.5			219	
11/7/2018	11.9	4.6		41.8	387.5 (D)		
11/8/2018							41.4
3/6/2019					341		
3/24/2019				20.9 (J)	277	243	
3/25/2019	12.6 (J)	4.7	20.8 (J)				50.3
10/15/2019			15.5				
10/16/2019	13.6	4.9		55.2			53
10/17/2019					309	260	
11/20/2019				55.8		308	

# Time Series

Constituent: Calcium (mg/L) Analysis Run 1/16/2020 1:15 PM  
Plant McManus Client: Southern Company Data: McManus Ash Pond

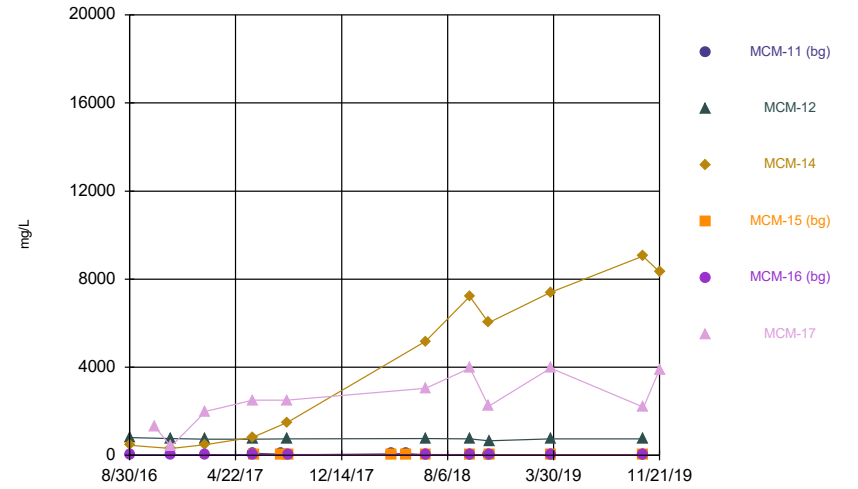
	MCM-11 (bg)	MCM-12	MCM-14	MCM-15 (bg)	MCM-16 (bg)	MCM-17
8/30/2016		7.05	42.8		4.02	
10/25/2016						69.4
11/30/2016		8.69	33.2		4.87	83.9
2/15/2017		8.34	56.1		6.61	96.3
5/31/2017	18.6	8.85	73.6			122
6/1/2017					6.42	
6/2/2017				2.77		
8/2/2017	18.5			1.27		
8/15/2017	4.09	8.05				117
8/16/2017			99.6			
8/17/2017				5.53	5.62	
4/4/2018	<25			6.5		
5/8/2018	18.4 (J)			6.7		
6/19/2018	4.3	8.3	285	7.4		136
6/20/2018					5.7	
6/28/2018		8.9	294			138
9/25/2018	6.2 (D)	6.8	283			
9/26/2018				8.5 (J)	5.3	148
11/6/2018	1.8		297			24.7
11/7/2018		8.5		9.8	5.3	
3/24/2019		7.4	338			136
3/25/2019	2.5 (D)			7.8	5.7	
10/15/2019		7.9	321	6.7		
10/16/2019	2.2				4.8	118
11/21/2019			305			125

Time Series



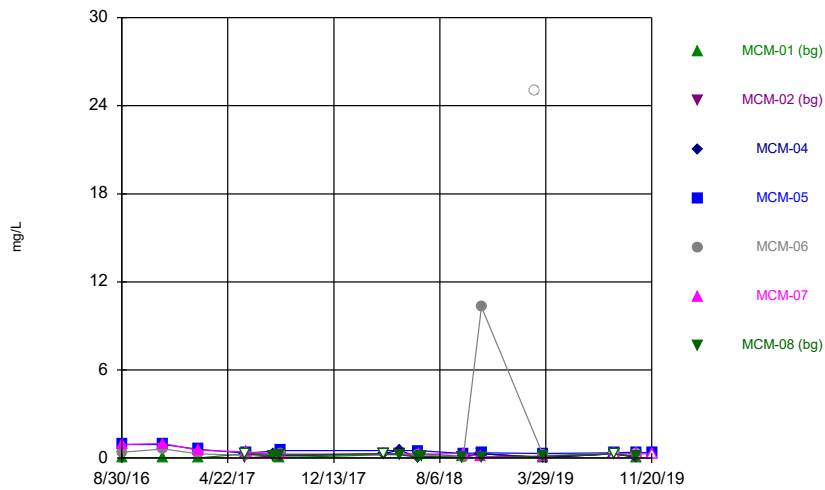
Constituent: Chloride Analysis Run 1/16/2020 1:14 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

Time Series



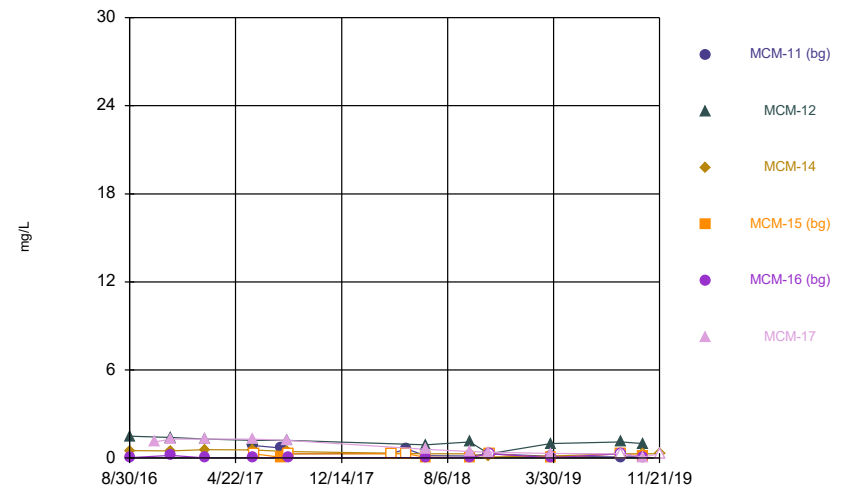
Constituent: Chloride Analysis Run 1/16/2020 1:14 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

Time Series



Constituent: Fluoride Analysis Run 1/16/2020 1:14 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

Time Series



Constituent: Fluoride Analysis Run 1/16/2020 1:14 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

# Time Series

Constituent: Chloride (mg/L) Analysis Run 1/16/2020 1:15 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

	MCM-01 (bg)	MCM-02 (bg)	MCM-04	MCM-05	MCM-06	MCM-07	MCM-08 (bg)
8/30/2016	9.7						
8/31/2016				1800	2200	2600	
11/30/2016	19			1100	2100	2800	
2/15/2017	21						
2/16/2017				2100	2500	3100	
5/31/2017		39					
6/1/2017	12		22				1400
6/2/2017				3100	2500	4600	
8/2/2017		42	230				1600
8/15/2017							1700
8/16/2017	14	41					
8/17/2017			210	2600	2700	4600	
4/4/2018			156				
4/5/2018		40.2					1900
5/8/2018			140				
5/9/2018		40.6					1870
6/19/2018	24.4	37.7					1890
6/20/2018			27.5	1800	3100		
6/21/2018						3920	
6/28/2018							1910
9/26/2018	23.4	33.4					2040
9/27/2018			101	1300	2510 (D)	5660 (D)	
11/6/2018			107			6520	
11/7/2018	21.8	30.7		1180	8860		
11/8/2018							2050
3/6/2019					11700		
3/24/2019				717	6470	8720	
3/25/2019	19.4	33.5	78.5				2340
10/15/2019			46				
10/16/2019	21.4	33.1		941 (D)			1331 (D)
10/17/2019					9930	8210	
11/20/2019				1480		9810	

# Time Series

Constituent: Chloride (mg/L) Analysis Run 1/16/2020 1:15 PM  
Plant McManus Client: Southern Company Data: McManus Ash Pond

	MCM-11 (bg)	MCM-12	MCM-14	MCM-15 (bg)	MCM-16 (bg)	MCM-17
8/30/2016		800	450		26	
10/25/2016						1300
11/30/2016		760	310		27	400
2/15/2017		740	490		30	2000
5/31/2017	98	740	820			2500
6/1/2017					27	
6/2/2017				11		
8/2/2017	57			3.2		
8/15/2017	15	750				2500
8/16/2017			1500			
8/17/2017				12	32	
4/4/2018	69			13.4		
5/8/2018	72.3			13.2		
6/19/2018	17.3	760	5180	13.7		3050
6/20/2018					30	
9/25/2018	31.3	752 (D)	7220			
9/26/2018				18.5	28.4	3965 (D)
11/6/2018	9.8		6020			2230
11/7/2018		665		20.2	25.1	
3/24/2019		744	7400			3960
3/25/2019	12.9			19.7	21.8	
10/15/2019		744	9050	17.1		
10/16/2019	12.2				20	2181.5 (D)
11/21/2019			8330			3890

# Time Series

Constituent: Fluoride (mg/L) Analysis Run 1/16/2020 1:15 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

	MCM-01 (bg)	MCM-02 (bg)	MCM-04	MCM-05	MCM-06	MCM-07	MCM-08 (bg)
8/30/2016	0.03 (J)						
8/31/2016				0.93	0.41	0.92	
11/30/2016	0.04 (J)			0.93	0.61	0.99	
2/15/2017	0.007 (J)						
2/16/2017				0.6	0.3 (J)	0.54	
5/31/2017		0.01 (J)					
6/1/2017	<0.3		<0.3				<0.3
6/2/2017				0.34	0.19 (J)	0.42	
8/2/2017		0.14 (J)	0.27 (J)				0.16 (J)
8/15/2017							0.21 (J)
8/16/2017	0.03 (J)	0.13 (J)					
8/17/2017			0.18 (J)	0.52	0.26 (J)	0.27 (J)	
4/4/2018			<0.3				
4/5/2018		<0.3					<0.3
5/8/2018			0.56				
5/9/2018		<0.3					0.23 (J)
6/19/2018	<0.3	0.065 (J)					0.043 (J)
6/20/2018			0.033 (J)	0.5	0.22 (J)		
6/21/2018						0.28 (J)	
6/28/2018							0.12 (J)
9/26/2018	0.12 (J)	0.029					0.029
9/27/2018			0.12 (J)	0.32	0.068 (J)	0.32 (D)	
11/6/2018			<0.3			0.086 (J)	
11/7/2018	<0.3	<0.3		0.35	10.3		
11/8/2018							0.04 (J)
3/6/2019					<25 (o)		
3/24/2019				0.32	0.19 (J)	0.14 (J)	
3/25/2019	0.038 (J)	0.039 (J)	0.055 (J)				0.12 (J)
8/27/2019	<0.3		<0.3				
8/28/2019		<0.3		0.36	<0.3	<0.3	<0.3
10/15/2019			0.095 (J)				
10/16/2019	0.046 (JD)	0.044 (JD)		0.41			0.1 (J)
10/17/2019					<0.3	<0.3	
11/20/2019				0.34		<0.3	

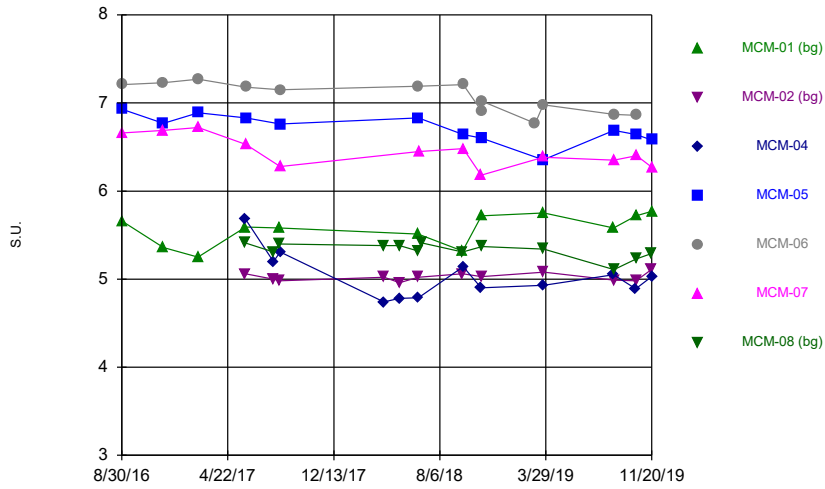


# Time Series

Constituent: Fluoride (mg/L) Analysis Run 1/16/2020 1:15 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

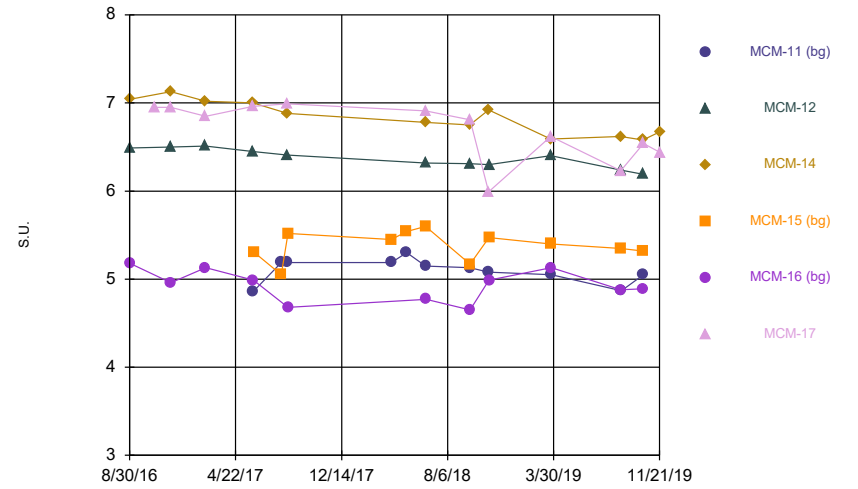
	MCM-11 (bg)	MCM-12	MCM-14	MCM-15 (bg)	MCM-16 (bg)	MCM-17
8/30/2016		1.5	0.5		0.04 (J)	
10/25/2016						1.1
11/30/2016		1.4	0.49		0.18 (J)	1.3
2/15/2017		1.3	0.58		0.02 (J)	1.3
5/31/2017	0.85	1.2	0.56			1.3
6/1/2017					0.005 (J)	
6/2/2017				<0.3		
8/2/2017	0.69			0.05 (J)		
8/15/2017	0.29 (J)	1.2				1.2
8/16/2017			0.45			
8/17/2017				<0.3	0.04 (J)	
4/4/2018	0.32			<0.3		
5/8/2018	0.63			<0.3		
6/19/2018	0.17 (J)	0.91	<0.3	0.057 (J)		0.6
6/20/2018					0.038 (J)	
9/25/2018	0.15 (J)	1.1	<0.3			
9/26/2018				0.029	0.029	0.44 (D)
11/6/2018	<0.3		0.084 (J)			0.4
11/7/2018		<0.3		<0.3	<0.3	
3/24/2019		0.99	0.14 (J)			0.31
3/25/2019	0.12 (J)			0.036 (J)	0.041 (J)	
8/26/2019			<0.3			
8/27/2019		1.1		<0.3	<0.3	<0.3
8/28/2019	0.068 (J)					
10/15/2019		1	<0.3	0.14 (J)		
10/16/2019	0.1 (J)				0.044 (J)	0.083 (J)
11/21/2019			<0.3			<0.3

Time Series



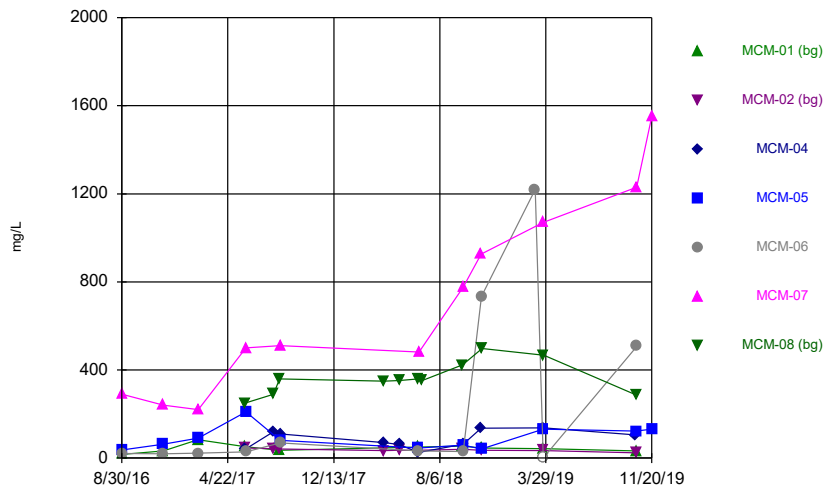
Constituent: pH Analysis Run 1/16/2020 1:15 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

Time Series



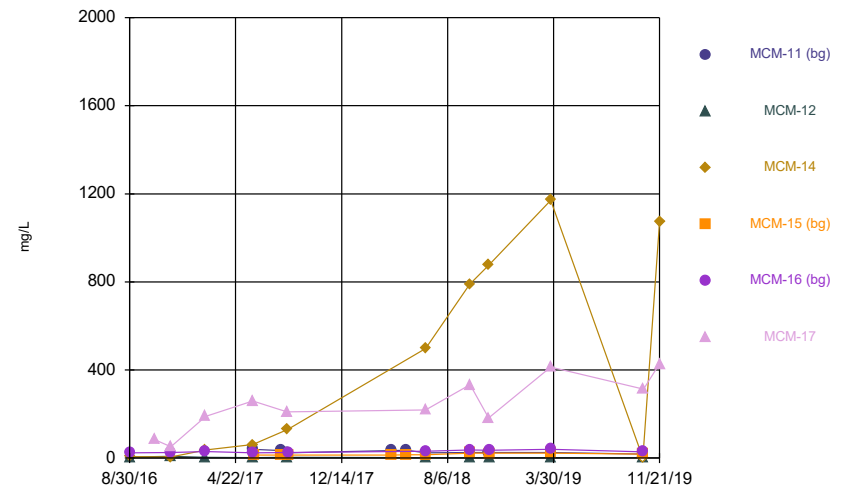
Constituent: pH Analysis Run 1/16/2020 1:15 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

Time Series



Constituent: Sulfate Analysis Run 1/16/2020 1:15 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

Time Series



Constituent: Sulfate Analysis Run 1/16/2020 1:15 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

# Time Series

Constituent: pH (S.U.) Analysis Run 1/16/2020 1:15 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

	MCM-01 (bg)	MCM-02 (bg)	MCM-04	MCM-05	MCM-06	MCM-07	MCM-08 (bg)
8/30/2016	5.66 (D)						
8/31/2016				6.93 (D)	7.21 (D)	6.66 (D)	
11/30/2016	5.36 (D)			6.77 (D)	7.23 (D)	6.69 (D)	
2/15/2017	5.25 (D)						
2/16/2017				6.89 (D)	7.27 (D)	6.72 (D)	
5/31/2017		5.06 (D)					
6/1/2017	5.59 (D)		5.68 (D)				5.41 (D)
6/2/2017				6.83 (D)	7.18 (D)	6.53 (D)	
8/2/2017		5 (D)	5.2 (D)				5.31 (D)
8/15/2017							5.4 (D)
8/16/2017	5.58 (D)	4.98 (D)					
8/17/2017			5.31 (D)	6.76 (D)	7.15 (D)	6.28 (D)	
4/4/2018			4.74 (D)				
4/5/2018		5.02 (D)					5.38 (D)
5/8/2018			4.78 (D)				
5/9/2018		4.96 (D)					5.38 (D)
6/19/2018	5.51 (D)	5.02 (D)					5.32 (D)
6/20/2018			4.79 (D)	6.83 (D)	7.19 (D)		
6/21/2018						6.45 (D)	
6/28/2018							5.41
9/26/2018	5.32 (D)	5.06 (D)					5.31 (D)
9/27/2018			5.14 (D)	6.64 (D)	7.21 (D)	6.48 (D)	
11/6/2018			4.9 (D)			6.18 (D)	
11/7/2018	5.72 (D)	5.03 (D)		6.6 (D)	6.91 (D)		
11/8/2018					7.02		5.37 (D)
3/6/2019					6.77		
3/24/2019				6.355 (D)	6.98 (D)	6.385 (D)	
3/25/2019	5.75 (D)	5.08 (D)	4.93 (D)				5.34 (D)
8/27/2019	5.58		5.05				
8/28/2019		4.99		6.69	6.87	6.35	5.11
10/15/2019			4.89				
10/16/2019	5.72	4.98		6.64			5.23
10/17/2019					6.86	6.4	
11/19/2019		5.11					5.29
11/20/2019	5.77		5.03	6.58		6.27	

# Time Series

Constituent: pH (S.U.) Analysis Run 1/16/2020 1:15 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

	MCM-11 (bg)	MCM-12	MCM-14	MCM-15 (bg)	MCM-16 (bg)	MCM-17
8/30/2016		6.49 (D)	7.04 (D)		5.18 (D)	
10/25/2016						6.95 (D)
11/30/2016		6.5 (D)	7.13 (D)		4.96 (D)	6.95 (D)
2/15/2017		6.51 (D)	7.02 (D)		5.13 (D)	6.85 (D)
5/31/2017	4.855 (D)	6.45 (D)	7 (D)			6.96 (D)
6/1/2017					4.99 (D)	
6/2/2017				5.31 (D)		
8/2/2017	5.19 (D)			5.05 (D)		
8/15/2017	5.19 (D)	6.41 (D)				6.99 (D)
8/16/2017			6.88 (D)			
8/17/2017				5.52 (D)	4.68 (D)	
4/4/2018	5.19 (D)			5.45 (D)		
5/8/2018	5.3 (D)			5.54 (D)		
6/19/2018	5.15 (D)	6.32 (D)	6.78 (D)	5.6 (D)		6.91 (D)
6/20/2018					4.77 (D)	
9/25/2018	5.13 (D)	6.31 (D)	6.75 (D)			
9/26/2018				5.17 (D)	4.65 (D)	6.81 (D)
11/6/2018	5.08 (D)		6.92 (D)			5.99 (D)
11/7/2018		6.3 (D)		5.47 (D)	4.99 (D)	
3/24/2019		6.4 (D)	6.59 (D)	5.4		6.62 (D)
3/25/2019	5.05 (D)			5.4	5.13 (D)	
8/26/2019			6.62			
8/27/2019		6.24		5.35	4.88	6.23
8/28/2019	4.87					
10/15/2019		6.19	6.58	5.32		
10/16/2019	5.05				4.89	6.54
11/21/2019			6.67			6.44

# Time Series

Constituent: Sulfate (mg/L) Analysis Run 1/16/2020 1:15 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

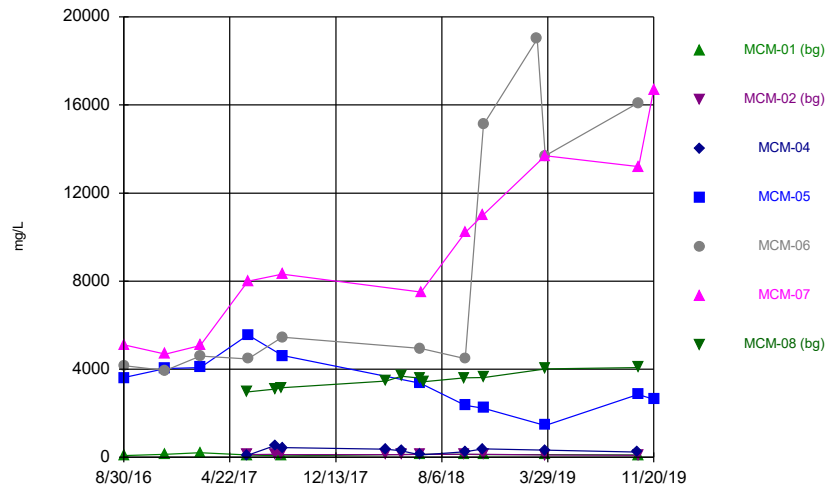
	MCM-01 (bg)	MCM-02 (bg)	MCM-04	MCM-05	MCM-06	MCM-07	MCM-08 (bg)
8/30/2016	17						
8/31/2016				37	21	290	
11/30/2016	33			63	19	240	
2/15/2017	83						
2/16/2017				90	22	220	
5/31/2017		46					
6/1/2017	51		42				250
6/2/2017				210	28	500	
8/2/2017		43	120				290
8/15/2017							360
8/16/2017	36	41					
8/17/2017			110	80	69	510	
4/4/2018			70.6				
4/5/2018		33.4					350
5/8/2018			61.4				
5/9/2018		36					353
6/19/2018	50.3	35.5					359
6/20/2018			25.3	46 (J)	33		
6/21/2018						481	
6/28/2018							352
9/26/2018	54.1	39.6					423
9/27/2018			63.4	58.5 (J)	29.4 (D)	777 (D)	
11/6/2018			136			926	
11/7/2018	45.6	35.8		41.3 (J)	734		
11/8/2018							498
3/6/2019					1220 (J)		
3/24/2019				131	<1	1070	
3/25/2019	43	34.2	137				467
10/15/2019			105				
10/16/2019	31.9	24.4		122.5 (D)			286.5 (D)
10/17/2019					507	1230	
11/20/2019				132		1550	

# Time Series

Constituent: Sulfate (mg/L) Analysis Run 1/16/2020 1:15 PM  
Plant McManus Client: Southern Company Data: McManus Ash Pond

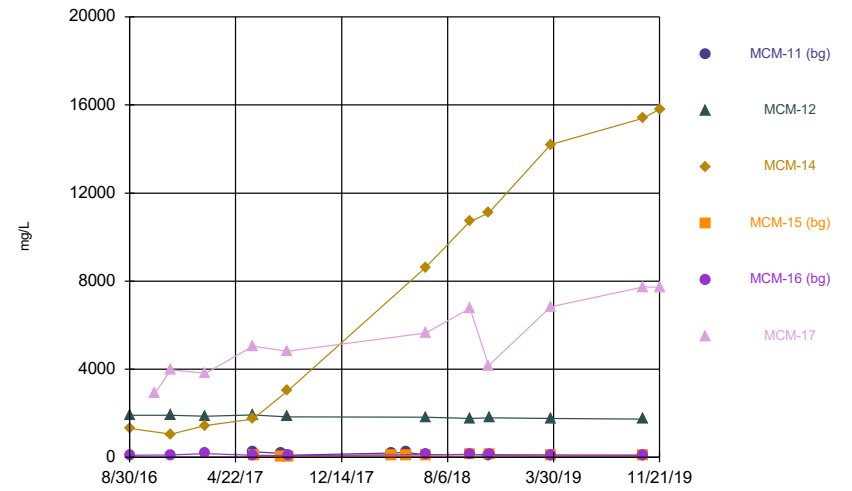
	MCM-11 (bg)	MCM-12	MCM-14	MCM-15 (bg)	MCM-16 (bg)	MCM-17
8/30/2016		4.3	6.4		24	
10/25/2016						84
11/30/2016		7.6	4.5		26	52
2/15/2017		3	37		30	190
5/31/2017	40	2.5	61			260
6/1/2017					24	
6/2/2017				13		
8/2/2017	34			14		
8/15/2017	24	3.2				210
8/16/2017			130			
8/17/2017				14	26	
4/4/2018	33.9			13.4		
5/8/2018	35.7			14.8		
6/19/2018	23.7	1.6	498	15.5		218
6/20/2018					31.2	
9/25/2018	25.6	1	790			
9/26/2018				23	36.8	333 (D)
11/6/2018	25.2		875			182
11/7/2018		0.41 (J)		22.2	35	
3/24/2019		1.5	1170			413
3/25/2019	24.9			22.4	40.1	
10/15/2019		0.54 (J)	<1	17.9		
10/16/2019	17.4				28.5	312.5 (D)
11/21/2019			1070			428

Time Series



Constituent: Total Dissolved Solids [TDS] Analysis Run 1/16/2020 1:15 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

Time Series



Constituent: Total Dissolved Solids [TDS] Analysis Run 1/16/2020 1:15 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

# Time Series

Constituent: Total Dissolved Solids [TDS] (mg/L) Analysis Run 1/16/2020 1:15 PM

Plant McManus Client: Southern Company Data: McManus Ash Pond

	MCM-01 (bg)	MCM-02 (bg)	MCM-04	MCM-05	MCM-06	MCM-07	MCM-08 (bg)
8/30/2016	86						
8/31/2016				3620	4160	5100	
11/30/2016	131			4030	3950	4680	
2/15/2017	212						
2/16/2017				4080	4600	5080	
5/31/2017		123					
6/1/2017	103		97				2970
6/2/2017				5560	4470	8000	
8/2/2017		136	538				3100
8/15/2017							3160
8/16/2017	65	124					
8/17/2017			445	4620	5450	8320	
4/4/2018			365				
4/5/2018		128					3460
5/8/2018			304				
5/9/2018		127					3680
6/19/2018	142	143					3600
6/20/2018			114	3370	4940		
6/21/2018						7500	
6/28/2018							3440
9/26/2018	133	132					3610
9/27/2018			255	2360	4480	10200	
11/6/2018			388			11000	
11/7/2018	121	134		2230	15100		
11/8/2018							3630
3/6/2019					19000		
3/24/2019				1450	13700	13700	
3/25/2019	116	111	327				4020
10/15/2019			237				
10/16/2019	104	96		2860			4070
10/17/2019					16100	13200	
11/20/2019				2640		16700	



# Time Series

Constituent: Total Dissolved Solids [TDS] (mg/L) Analysis Run 1/16/2020 1:15 PM

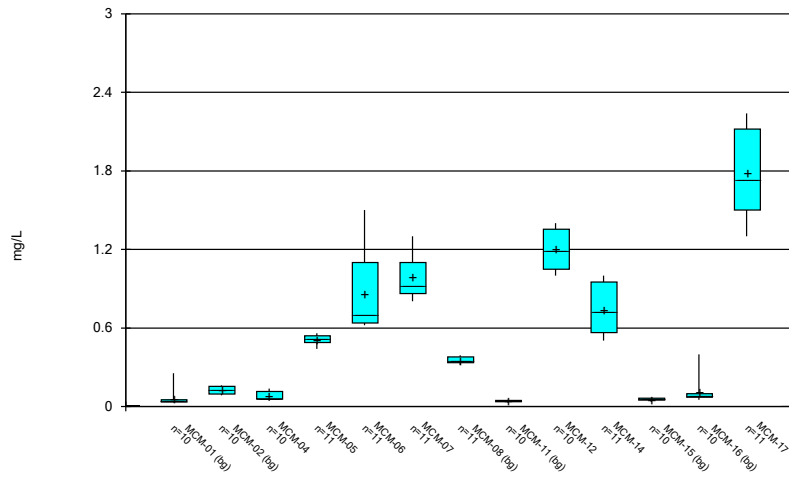
Plant McManus Client: Southern Company Data: McManus Ash Pond

	MCM-11 (bg)	MCM-12	MCM-14	MCM-15 (bg)	MCM-16 (bg)	MCM-17
8/30/2016		1910	1310		99	
10/25/2016						2900
11/30/2016		1910	1050		111	3970
2/15/2017		1870	1440		170	3820
5/31/2017	257	1920	1740			5050
6/1/2017					98	
6/2/2017				69		
8/2/2017	183			35		
8/15/2017	90	1840				4820
8/16/2017			3010			
8/17/2017				51	84	
4/4/2018	197			90		
5/8/2018	225			89		
6/19/2018	112	1820	8630	110		5640
6/20/2018					123	
9/25/2018	137	1760	10700			
9/26/2018				124	117	6770 (D)
11/6/2018	89		11100			4160
11/7/2018		1800		125	120	
3/24/2019		1770	14200			6840
3/25/2019	74			98	101	
10/15/2019		1730	15400	107		
10/16/2019	82				95	7740
11/21/2019			15800			7720

# Box Plots

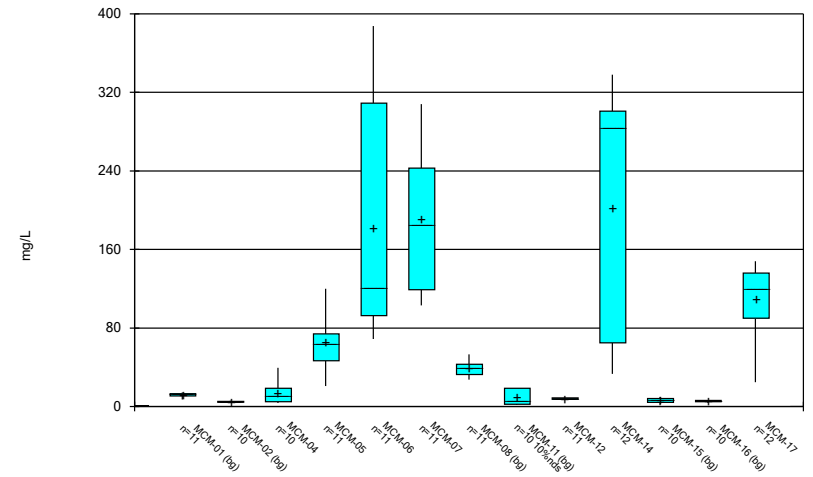
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Box & Whiskers Plot



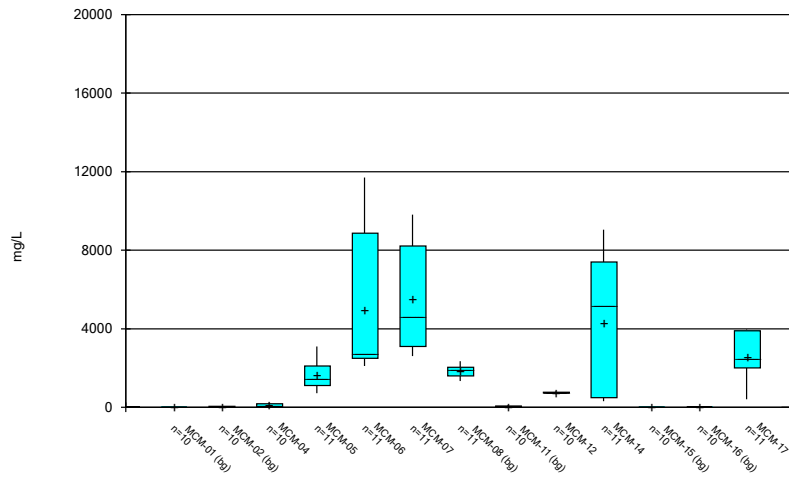
Constituent: Boron Analysis Run 1/16/2020 1:15 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

Box & Whiskers Plot



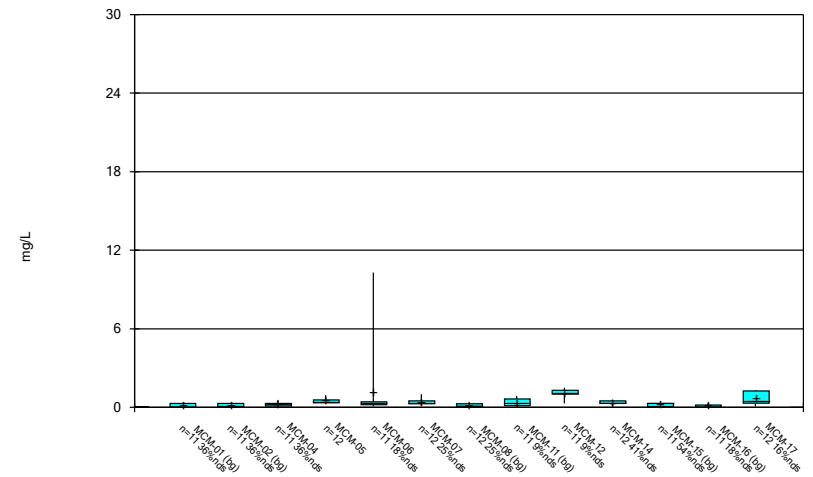
Constituent: Calcium Analysis Run 1/16/2020 1:15 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

Box & Whiskers Plot



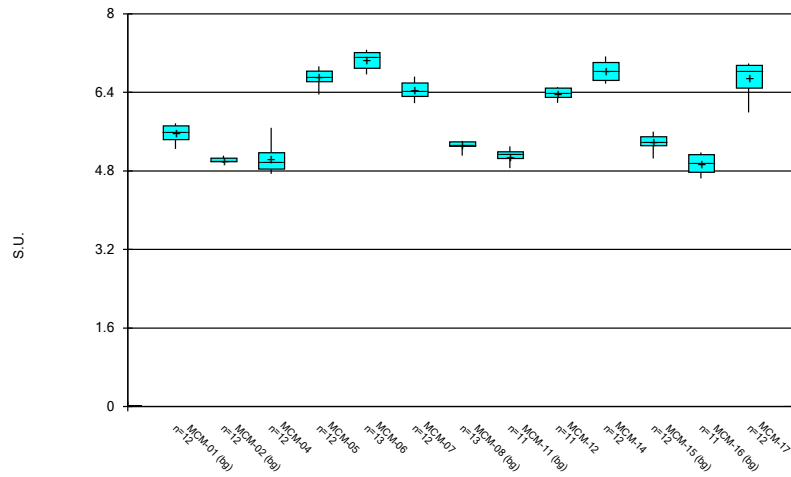
Constituent: Chloride Analysis Run 1/16/2020 1:15 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

Box & Whiskers Plot



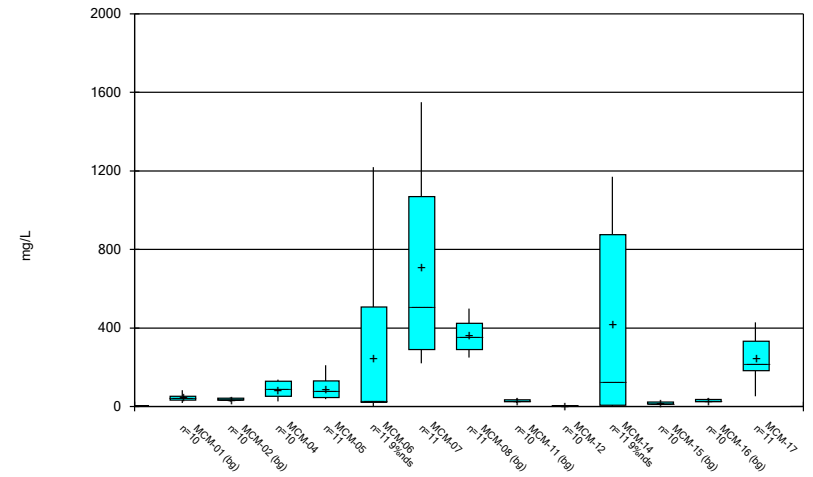
Constituent: Fluoride Analysis Run 1/16/2020 1:15 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

Box & Whiskers Plot



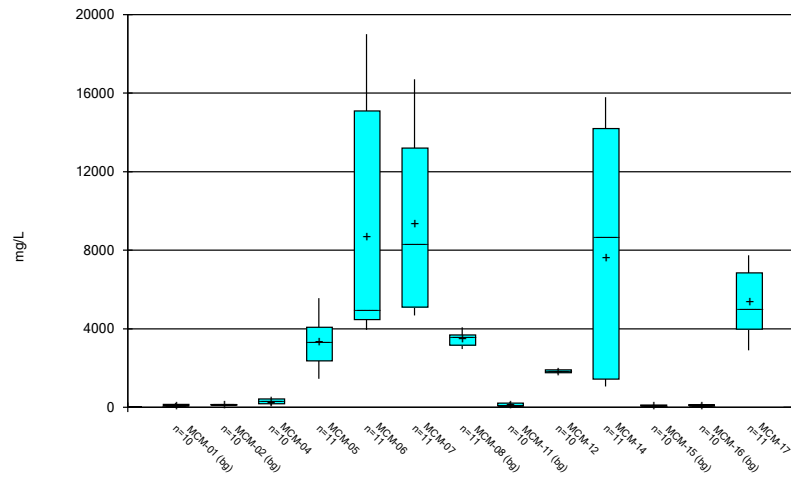
Constituent: pH Analysis Run 1/16/2020 1:15 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

Box & Whiskers Plot



Constituent: Sulfate Analysis Run 1/16/2020 1:15 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond

Box & Whiskers Plot



Constituent: Total Dissolved Solids [TDS] Analysis Run 1/16/2020 1:15 PM  
 Plant McManus Client: Southern Company Data: McManus Ash Pond